ENVIRONMENTAL ASSESSMENT

REHABILITATION OF EAST STATE PARK ROAD, REALIGNMENT OF MT. BALDY ENTRANCE, AND MISCELLANEOUS IMPROVEMENTS

INDIANA DUNES NATIONAL LAKESHORE
National Park Service

September 2006

Prepared pursuant to the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (43 CFR 1500), 42 U.S.C. 4332(2)(C), and National Park Service Director's Order #12: Conservation Planning, Environmental Impact Analysis, and Decision-making; and Handbook.

ABSTRACT

The National Park Service (NPS), in cooperation with the Federal Highway Administration, proposes to improve East State Park Road at the Beverly Drive Intersection and the Mount Baldy Entrance Road in the Indiana Dunes National Lakeshore, Porter and La Porte Counties, Indiana. The NPS's goal in selecting a preferred build alternative for East State Park Road in Porter County is to address flooding and to provide and preserve an adequate pavement structure to meet appropriate traffic demands. The proposed project work consists of rehabilitating East State Park Road and performing necessary intersection improvements within the project limits. The project includes pavement removal, milling, pavement patching, asphalt paving, drainage work, and miscellaneous work. Drainage work consists of reconditioning, cleaning, and replacement of culverts, inlets, and ditches; and possibly raising the roadway grade above the flood level. The Mt. Baldy Entrance Road in La Porte County provides access to the Mt. Baldy Parking Area. Mt. Baldy is one of the Lakeshore attractions. The existing intersection is aligned at a very sharp angle with U.S. Route 12, which creates poor sight conditions and difficult turn movements. The Park's goal in selecting a preferred alternative for the Mt. Baldy Entrance Road is to maintain or improve the safety and accessibility of the intersection with U.S. Route 12.

Public Comment

This environmental assessment will be on public review from September 18, 2006 through October 17, 2006. If you wish to comment on the environmental assessment, you may mail comments to the name and address below. Please note that the names and addresses of people who comment become part of public record. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment. We will make all submissions from organizations, businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public inspection in their entirety.

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An electronic version of this document can be found on the National Park Services Planning Environment and Public Comment (PEPC) website at http://parkplanning.nps.gov. This site provides access to current plans, environmental impact analyses, and related documents on public review. Users of the site are encouraged to submit comments on this document while it is available for public review. This document is located under the Midwest Region, Indiana Dunes National Lakeshore.

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1.0 INTRODUCTION/PURPOSE AND NEED

1.1 ABOUT THIS DOCUMENT

In 1969, the United States Congress passed the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.) to establish a national policy,

> *"…which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; …"*

NEPA also established the Council on Environmental Quality (CEQ) as an agency of the Executive Office of the President. In enacting NEPA, Congress recognized that nearly all federal activities affect the environment in some way. Section 102 of NEPA mandates that before federal agencies make decisions, they must consider the effects of their actions on the quality of the human environment. NEPA assigns CEQ the task of ensuring that federal agencies meet their obligations under the Act.

The CEQ developed regulations (40 CFR 1500-1508) that describe the means for federal agencies to develop the Environmental Impact Statements (EIS's) mandated by NEPA in Section 102. The CEQ regulations developed the Environmental Assessment (EA) to be used when there is not enough information to decide whether a proposed action may have significant impacts. If an EA concludes that a federal action will result in significant impacts, it becomes an EIS. Otherwise, it results in a Finding of No Significant Impact (FONSI).

Section 1508.09 of the CEQ regulations states that the purposes of an EA are to:

1. Briefly provide sufficient evidence and analysis for determining whether to prepare an EIS or a FONSI.
2. Aid an agency's compliance with the Act when no environmental impact statement is necessary.
3. Facilitate preparation of a statement when one is necessary.

Preparation of an EA is also used to aid in an agency's compliance with Section 102(2)E of NEPA, which requires an agency to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."

The Department of the Interior produced its NEPA regulations as Part 516 of its Departmental Manual (516 DM), last revised in March 2004. The National Park Service (NPS) produced several NEPA handbooks. In January 2001, the NPS released the Director's Order #12: Conservation Planning, Environmental Impact Analysis, and Decision Making. The Federal Highway Administration's NEPA regulations are part of 23 CFR 771. The FHWA Tech Advisory T6640.8A was written in 1987 to provide guidance on environmental documents.

1.2 PURPOSE AND NEED FOR THE PROPOSED ACTION

Need

The asphalt pavement along the entire length of East State Park Road is in poor condition. A portion of the roadway length, in the vicinity of the intersection with Beverly Drive, frequently becomes flooded and the pavement is completely submerged in standing water for extended time periods. The saturation of the road base, surface, and shoulders causes the pavement to deteriorate. Deteriorated pavements experience cracking, crumbling, and require additional maintenance such as crack sealing and pothole patching. When there is standing water on the roadway, the effects on visitors and residents driving this intersection include; poor driving conditions, reduced traffic capacity (lower speeds), loss of steering and braking control, and increased potential for vehicles to stray from the roadway. During the winter, the frozen floodwaters create very slick and unsafe conditions. The standing water on the roadway also washes into the vehicle undercarriages, distributing vehicle contaminants such as oil and antifreeze into the wetlands adjacent to the roadway.

The Mt. Baldy Entrance Road is aligned at a very sharp angle at the intersection with U.S. Route 12. This creates poor sight conditions, which makes it difficult for drivers to see oncoming traffic. The sharp angle also creates difficult turn movements.

Figure 1. Standing water covers the roadway looking east along Beverly Drive from the intersection with East State Park Road.

Figure 2. The Mt. Baldy Entrance Road intersects with U.S. Route 12 at a 45-degree angle, limiting sight distance to drivers exiting the Mt. Baldy Entrance Road.

Purpose

The purpose of this project is to improve safe access for vehicles along East State Park Road and Beverly Drive while minimizing disruption to the surrounding wetland environment, and improve safety at the intersection of the Mt. Baldy Entrance Road and U.S. Route 12.

Project Objects

The following objectives should be met in order for the project to be successful.

- Improve the safety of the public at the intersection of East State Park Road and Beverly Drive by providing safe, reliable driving surfaces that are not compromised by standing water on the roadway surface.

- Provide for natural resource protection by providing a buffer between vehicle contaminants and the water of the surrounding wetland environment.

- Improve safety at the intersection of the Mt. Baldy Entrance Road and U.S. Route 12 by making it easier for the public the see oncoming traffic when turning onto U.S. Route 12 from the Mt. Baldy Entrance Road, and by creating easier turn movements.

1.3 PURPOSE AND SIGNIFICANCE OF THE PARK

Description of the Park

The NPS preserves outstanding representatives of the best of America's natural, cultural, and recreational resources of national significance. These resources constitute a significant part of the American heritage, its character, and future. Along with similar resources of local, state, tribal, and national significance administered by other public and private organizations and supported by NPS technical assistance and grant funding, Indiana Dunes National Lakeshore (National Lakeshore) is a vital part of America's system of parks and other preserved resources. The NPS not only directly and indirectly preserves these irreplaceable national treasures, it also makes them available annually to millions of visitors from throughout both this country and the world**.** The Park had almost 2.2 million visitors in 2005.

The National Lakeshore was authorized by Congress in 1966 to preserve the complex ecosystems that exist on the dunes along Lake Michigan. The mission of the National Lakeshore is to preserve the dunes and other areas of scenic, scientific, and historic interest and recreational value and to provide for educational, inspirational, and recreational use by the public so long as such use is compatible with the preservation of the Park's unique flora, fauna, and physical geographic conditions and its historic sites and structures. The National Lakeshore was established during an era when the Nation struggled to balance America's need for conservation with its need for economical and industrial development. Various steel companies are located between the east and west units of the Park and along the west boundary. Most of the land outside of the National Lakeshore has been developed.

Project Location

The National Lakeshore is located approximately 50 miles southeast of Chicago, Illinois in the counties of Lake, Porter, and La Porte in northwest Indiana. The National Lakeshore runs for nearly 25 miles along southern Lake Michigan, bordered by Michigan City, Indiana, on the east, and Gary, Indiana, on the west. The National Lakeshore contains approximately 15,000 acres, 2,182 of which are located in Indiana Dunes State Park and managed by the Indiana Department of Natural Resources. The area contains beaches, sand dunes, bogs, wetlands, woodland forests, an 1830's French Canadian homestead, and a working 1900 era farm.

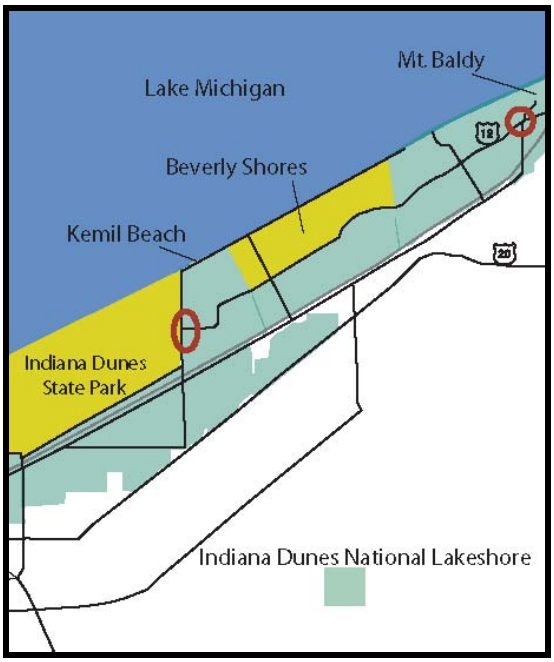

Figure 3. The location of the East State Park Road – Beverly Drive intersection, and Mt. Baldy Entrance Road – U.S. 12 intersection are circled in red.

Project Background

There are two roadway sites currently under consideration for improvements: East State Park Road at the intersection with Beverly Drive, and the Mt. Baldy Entrance Road at the intersection with U.S. Route 12. East State Park Road is a two-lane, two-way concrete roadway with an asphalt overlay, which provides access to the Kemil Beach area from U.S. Route 12 to Lake Front Drive. The roadway length is approximately 1.2 miles and the average width is 18 feet with grass shoulders along both sides. The posted speed limit is 30 mph south of Beverly Drive, and 20 mph north of Beverly Drive. The Chicago South Shore and South Bend Railroads cross East State Park Road near the U.S. Route 12 intersection. The Kemil Beach parking area is located between Beverly Drive and Kemil Beach and provides parking for approximately 100 vehicles.

The Mt. Baldy Entrance Road, in La Porte County, is a two lane, asphalt paved roadway that provides access to the Mt. Baldy site, which is one of the National Lakeshore attractions. The Mt. Baldy Entrance Road is approximately 0.12 miles in length and the average width is approximately 20 feet with grass shoulders along both sides. There is no posted speed limit.

This road accesses the Mt. Baldy Parking Area, which provides parking for approximately 100 vehicles.

Although the NPS does not have ownership of either East State Park Road or Beverly Drive; legislative authority has been granted to direct expenditure of federal funds when so appropriated to provide maintenance and repair of certain designated roads within the National Lakeshore boundary. These two roads have been so designated.

1.4 RELATED PROJECTS AND PLANS

The General Management Plan for the Park

The primary goals of the 1980 General Management Plan and amendments are to preserve and protect the special values of the National Lakeshore, provide opportunities for visitors of diverse backgrounds to understand and enjoy what makes the lakeshore special, and work with lakeshore neighbors to achieve mutual goals and minimize impacts from visitation. In order to accomplish these goals, the Management Plan seeks to define the proper balance between cultural and natural resource preservation, public education, and recreation (NPS 1997). All action alternatives are supportive of this Plan because they will preserve the natural environment while concurrently improving the visitor experience.

Fire Management Plan

Wildland fire has played a major role in shaping the natural landscape of the National Lakeshore area. Management policies require that all NPS areas, with vegetation capable of sustaining fire, develop a Fire Management Plan (DOI 1998). The plan outlines actions that will suppress undesirable fires, effectively control prescribed fires, protect and manage resources with wildland fire, protect firefighters and the public, and protect property.

A portion of East State Park Road passes along the west edge of the Dune Ridge Fire Unit. Fires are conducted every 5-7 years when resources and favorable conditions exist. The Mt. Baldy Entrance Road traverses the southeastern edge of the Kintzele Ditch Fire Unit. A prescribed fire was conducted during the spring of 2006.

1.5 SCOPING

Internal Scoping

A meeting was held on August 26, 2005, and was attended by FHWA and NPS. At this meeting potential issues including the impact of alternatives to the drainage pattern of the State Park and the control of the water levels on each side of the East State Park Road were discussed. Also discussed at this meeting was the purpose and need for the project.

External Scoping

Public Scoping

A newsletter advising the public of this project and seeking comments regarding potential project alternatives was sent in December of 2004. Articles were written in the Michigan City News Dispatch, and the Post Tribune regarding the proposed project and how the public could submit comments. A letter regarding the project was sent to the town of Beverly Shores, which was read and discussed at the Beverly Shores monthly town hall meeting on January 17th, 2005. On February 5, 2006, the Superintendent met with the Association of Beverly Shores Residents. Copies of the Scoping Report were distributed to the residents to facilitate discussion regarding the project. Forty comments were received. Approximately 19 of the comments were in favor of the obliteration of Beverly Drive, approximately 19 comments were in favor of keeping Beverly Drive open, and approximately two comments were in favor of keeping access through Beverly Drive either by road or trail.

Agency Scoping

The United States Fish and Wildlife stated in a letter dated December 27, 2004 that, "Closing Beverly Drive 200 feet or more east of East State Park Road, with access remaining from Broadway to the east, appears to be the most environmentally acceptable alternative…"

The Indiana Department of Natural Resources stated in a letter dated December 01, 2004 that, "State Park property on the west side of East State Park Road is dedicated as a State Nature Preserve, and state statute prohibits the disturbance or any taking of this property." They also stated that, "Our preference of the four alternatives to alleviate flooding in the vicinity of Beverly Drive is the obliteration alternative. This alternative appears to have the least potential for negative effects upon the area's sensitive natural resources. We are concerned that any raising of the existing roadway or the construction of earthen berms, as proposed in the multiple culvert alternative and the flow-control berm alternative would substantially alter the flow of surface water and result in negative hydrological effects. We are also quite concerned that both of these alternatives as well as the viaduct alternative will result in excessive construction activity; because of the area's ecological sensitivity it seems prudent to select the alternative requiring the least construction activity."

Issue Identification

Issues as discussed in NEPA describe the relationships between the action being proposed and the environmental (natural, cultural and socioeconomic) resources. Issues describe an association or a link between the action and the resource. Issues are not the same as impacts, which include the intensity or results of those relationships. Internal and external scoping (defining the range of potential issues) was conducted for this EA to identify what relationships exist between the proposed action and environmental resources.

- The Indiana Dunes State Park has concerns about additional water being directed to their park and the long-term effects to the flow of surface water.

- Because of a long duration of standing water on the roadway, the road surface and road bed have significantly deteriorated.

- Surveys have suggested that there is increased biodiversity (primarily of birds) in the northeast quadrant of the intersection due to raised water levels in that area. The National Lakeshore would like water levels to remain at their existing level.

- The Town of Beverly Shores has concerns about additional traffic being routed through town.

- The alternatives may be difficult to construct in wetland/standing water conditions.

1.6 IMPACT TOPICS

Derivation of Impact Topics

Impact topics were used to focus the evaluation of the potential environmental consequences of the alternatives. Candidate impact topics were identified based on legislative requirements, executive orders, topics specified in Director's Order #12 and Handbook (NPS 2001a), NPS *Management Policies 2001* (NPS 2001b), guidance from the National Park Service, input from other agencies, public concerns, and resource information specific to the National Lakeshore.

The issues identified above were translated and focused into impact topics for a more specific description of resources that may be impacted by the action. These impact topics are then carried through the analysis in the EA.

<u>Impact Topics Requiring Further Analysis</u>

Vegetation

NEPA requires an examination of impacts on the components of affected ecosystems. NPS policy requires the protection of the natural abundance and diversity of all the Park's naturally occurring communities. Vegetation is managed in accordance with NPS *Management Policies 2001*. Clearing would be required for the movement of any roads or facilities; therefore the impacts to vegetation will be addressed for each alternative.

Wildlife and Wildlife Habitat

The NPS Organic Act, which directs Parks to conserve wildlife unimpaired for future generations, is interpreted by the agency to mean that native animal life should be protected and perpetuated as part of the Park's natural ecosystem. Removal of vegetation and the construction of an alternative could affect the Park's wildlife; therefore this impact topic will be addressed further.

Wetlands

Pursuant to Executive Order 11990: Protection of Wetlands, the impact of a proposed project on wetland areas must be assessed. For the purposes of implementing E.O. 11990, any area that is classified as wetland habitat according to the U.S. Fish and Wildlife Service's (FWS) "Classification of Wetlands and Deepwater Habitats of the United States" (Cowardin et al. 1979) is subject to Director's Order #77-1 and its implementing procedures. The Cowardin classification system forms the basis for the FWS's National Wetlands Inventory (NWI) mapping program. Under the Cowardin classification system, a wetland must have one or more of the following attributes:

- At least periodically, the land supports predominantly hydrophytes (wetland vegetation)
- The substrate is predominantly undrained hydric soil; or
- The substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of the year.

The Cowardin definition includes more habitat types than the wetland definition (33 CFR 328.3) and delineation manual used by the Corps of Engineers (Corps) for identifying wetland subject to Section 404 of the Clean Water Act. The 1987 "Corps of Engineers Wetlands Delineation Manual" requires that all three of the parameters listed above (hydrophytic vegetation, hydric soil, wetland hydrology) be present in order for a habitat to be considered a wetland. Wetlands are present on both sides of the project area; therefore this impact topic will be discussed further.

Local Area Flooding

Natural drainage from the Great Marsh near Beverly Shores flows through the Dunes Creek drainage basin that empties into Lake Michigan about 2.5 miles west of Beverly Shores. Persistent flooding has been observed at the East State Park Road-Beverly Drive intersection throughout late winter and spring. During high precipitation events and the spring thaw, water accumulates from the northeast portion of the project area and flows over the roadway. Observational data indicates that the standing water on the roadway reaches of height of 12 inches, and is concentrated within 300-feet north from the intersection, 100 feet south from the intersection and 200 feet east from the intersection. The existing hydrology creates a unique ecosystem in the northeast section of the East State Park Road-Beverly Drive intersection because the water level is higher as compared to west and southeast of the intersection. No recorded data are known to exist to quantify the current and previous flooding volumes, the duration of the flooding, or the source of the flooding.

Visitor Use and Experience

NPS *Management Policies 2001* state that the enjoyment of Park resources and values by the people of the United States is part of the fundamental purpose of all Parks. The NPS is committed to providing appropriate, high-quality opportunities for visitors to enjoy the Parks. The National Lakeshore contains 15,000 acres of beaches, sand dunes, bog, wetlands, and woodland forests, including almost 25 miles of lakeshore. The National Lakeshore is open from 6am-sunset year round, with the peak visitation season occurring from May-September. Almost 2.2 million recreational visits occurred during FY 2005. Disruptions to traffic patterns during the

construction activities could occur. Since the proposed action has the potential to impact visitor use and operations during construction, this topic will be discussed further.

Visitor Conflicts and Safety

The NPS *Management Policies 2001* state that the NPS will seek to provide a safe and healthful environment for visitors and employees. Analyses of the potential impacts on transportation/traffic were derived from the available information on the East State Park Road and the Mt. Baldy entrance road and the professional judgment of the Park Staff and United States Park Police. Traffic management during construction activities has the potential to create visitor safety concerns; therefore this topic will be discussed further.

Impact Topics Dismissed From Further Analysis

Cultural Resources

Under the requirements of: the National Historic Preservation Act of 1966, as amended; the implementing regulations at 36 CFR § 800; *Management Policies 2001*, NPS guidance on treatment of cultural resources (NPS-28); and the implementing agreement between the NPS and the National Council of State Historic Preservation Officers; the NPS is required to consider the effects of their proposed undertakings on cultural resources.

When the National Lakeshore was established in 1966, approximately 1,000 commercial buildings and home sites were included within the park's boundaries. Of those, 19 sites have been determined eligible for inclusion on the National Register of Historic Places, and they are in various stages of preservation. In addition, there are 6 known Historic Trails and 12 Historic Railroad Beds (NPS 2001). The Park also has 204 known Archaeological Sites and 5 Cultural Landscapes, and maintains more than 66,000 Museum Collection Items (NPS 2001).

The National Lakeshore has reviewed the proposed undertaking in accordance with the National Historic Preservation Act of 1966, as amended, and the implementing agreement. After consultation with the Midwest Regional Office and the Midwest Archeological Center of the National Park Service, the National Lakeshore has determined that there are no historic buildings, structures, districts, objects, or archaeological resources within the area of potential effect. In a letter dated 10/25/05 the SHPO concurred with the Lakeshore's determination of effect of no historic properties. This letter is contained within the appendices.

If any archeological artifacts or human remains are uncovered during construction, demolition, or earthmoving activities, construction shall be halted and under state law (Indiana Code 14-21-1-27 and 29) the discovery shall be reported to the Department of Natural Resources within two (2) business days. In the event that artifacts or features are discovered during the implementation of the Federally funded project, activity, or program it is the NPS's responsibility to make reasonable efforts to avoid, minimize, or mitigate adverse effects in accordance with 36 CFR § 800.13.

Special Status Species

Section 7 of the Endangered Species Act (ESA) directs all Federal agencies to use their authority in furtherance of the conservation of rare, threatened, and endangered species. Federal agencies are required to consult with the U.S. Fish and Wildlife Service (FWS) to ensure that any action authorized, funded, and/or carried out by an Agency does not jeopardize the continued existence of any listed species or critical habitat. NPS policy also requires examination of the impacts on Federal candidate species, as well as State-listed threatened, endangered, candidate, rare, declining, or sensitive species. The FWS stated in a letter dated December 27, 2004, that "The proposed project is within the range of the Federally endangered Indiana bat (*Myotis sodalis*), Karner blue butterfly (*Lycaeides Melissa samuelis*), and piping plover (*Charadrius melodus*), and the threatened bald eagle (*Haliaeetus leucocephalus*), and Pitcher's (Dune) thistle (*Cirsium pitcheri*)," and that " …the proposed projects are not likely to adversely affect these endangered and threatened species or critical habitat." Therefore this impact topic does not require further discussion.

Floodplains

Development within floodplains and floodways is regulated by Federal and State laws to reduce the risk of property damage and loss of life due to flooding, as well as to preserve the natural benefits floodplain areas have on the environment. Executive Order 11988: Floodplain Management requires all federal agencies to avoid construction within 100-year floodplains unless no other practical alternative exists. The Executive Order does not ban all construction within floodplains, but only construction of certain types of facilities that may present a danger to life or an impediment to floodplain functions. Generically, the term "floodplain" refers to the area near streams that may be submerged by floodwaters. For streams that have undergone detailed analysis by the Federal Emergency Management Agency (FEMA) as a part of the National Flood Insurance Program, the term "floodplain" is more specifically defined as the area that would be expected to submerge during a 100-year flood (often referred to as the "regulatory flood"). The 100-year flood serves as the "base" flood for purpose of flood plain management measures. The "flood profile elevation" is an associated term that refers to the water level elevation at any point along a stream during a 100-year flood event. East State Park Road and Beverly Drive are not in a floodplain, therefore this impact topic will be dismissed from further analysis.

Water Quality

NPS *Management Policies 2001* require protection of water quality consistent with the Clean Water Act (CWA). All construction activities would include Best Management Practices to address sediment and erosion control. A sediment and erosion control plan utilizing Best Management Practices would be prepared and included in the final construction plans. The Best Management Practices include: silt fences and hay bales placed at the foot of slopes and at other locations to contain excavated material and to filter sediment from stormwater runoff; temporary berms and stream diversion channels to separate stream and other significant drainage flow from erodable soil; and temporary seeding of slopes for short-term re-stabilization. The proposed action would cause negligible adverse impacts to water quality, as a sediment and erosion control

plan would be implemented during construction. Therefore this impact topic does not require further discussion.

Socioeconomic Environment

Socioeconomic issues are defined as actions that have the potential to create a negative change to the demographics, housing, employment, and economy of an area. The project area is located in Porter and La Porte Counties, Indiana, in close proximity to the town of Michigan City and the Indiana Dunes State Park, within the National Lakeshore. Most of the surrounding area encompasses residential areas. The proposed action would have short-term minor beneficial impacts because during construction there would be an increase in employment and the utilization of local services. Therefore this impact topic does not require further discussion.

Air Quality

The 1963 Clean Air Act, as amended (42 U.S.C. 7401 et seq.) requires Federal land managers to protect Park air quality. Section 118 of the CAA requires the NPS to meet all Federal, State, and local air pollution standards. Construction may have a temporary negligible adverse impact on air quality as a result of dust and vehicle emissions. The impacts will be short-term; ending at the completion of the project; therefore this impact topic does not require further discussion.

Sound Environment/Soundscape

The *NPS Management Policies 2001* state that the NPS will strive to protect the natural quiet and natural sounds associated with the physical and biological resources of the Park. The soundscape of a Park is comprised of the natural sound conditions and exists in the absence of any human-produced noises. This is the basis for determining the "affected environment" and impacts on a Park soundscape. The area is mostly serene and tranquil with the majority of noise being generated by vehicular traffic, railroad traffic, and human activity from recreational users. Additional ambient noise is generated by nearby Michigan City and from occasional aircraft. Construction activities would have an impact on the soundscape, but since those impacts would be short term and minor, this impact topic does not require further discussion.

Environmental Justice

Executive Order 12898: Federal Actions to Address Environmental Justice in Minority and Low Income Populations forbids Federal agencies from disproportionately affecting minority and/or low-income communities. The project area and all related work will be within the boundaries of the Park. Any impacts of the project would affect all Park visitors equally and would not disproportionately affect low-income or minority individuals or populations. Therefore environmental justice does not require further discussion.

Geology and Soils

The National Lakeshore is within the Calumet Lacustrine Plain Physiographic Province, which is characterized by multiple sand ridges and large high sand dunes. The characteristics of this province were originally formed by centuries of glacial action, wind and wave action, and major

changes in the water surface level of Lake Michigan. The ancient lake surface fluctuations have left the present day dunes aligned in rows parallel to the shoreline; former inlets and channels are now wetlands. The current state features a variety of plant habitat including open water and sand, forests, and wetland marsh areas. There are now four major dune complexes. Beginning with the present shoreline and moving inland into progressively older dunes, they include the present dune formation, the Tolleston dunes, the Calumet dunes and the Glenwood dunes.

Other than the dunes, ridges, moraines, and ravines the terrain is relatively flat. Elevations range from approximately 586 feet above sea level (at Lake Michigan) to 940 feet above sea level (at Pinhook Bog). A system of beaches and dunes is located on the immediate shore of Lake Michigan. The dunes stand in a series of hills consisting of foredunes, interdunes, and backdunes.

The thick glacial drifts of the Wisconsonian age that mantle the entire area consist of till, clay, silt, sand, gravel, muck, and peat. Clay-rich soils occur in the southern portion of the Park underlain by glacial moraine and lake deposits. Over 95 percent of the soils of the dune ridges contain sand with little clay. The interdunal basin area wetland soils contain higher levels of organic material than adjacent dune ridges. The underlying bedrock layer consists of well-consolidated limestone, dolomite, sandstone, and shale.

The relocation of the Mt. Baldy Entrance Road would involve minor earth moving activities. Native soils may be removed adjacent to East State Park Road and Beverly Drive and replaced with a base material to provide for a stable foundation for a new raised roadway. This disturbance would be limited therefore the impacts would be negligible. The construction of roadway shoulders or a berm would cause the introduction of foreign soils to the intersection of East State Park Road and Beverly Drive. Earth-moving activities would be minor; therefore this impact topic does not require further discussion.

2.0 DESCRIPTION OF ALTERNATIVES

The CEQ has provided guidance on the development and analysis of alternatives under NEPA. A full range of alternatives, framed by the purpose and need, must be developed for analysis for any federal action. They should meet the project/proposal purpose and need, at least to a large degree. They should also be developed to minimize impacts to environmental resources. Alternatives should also be "reasonable," which CEQ has defined as those that are economically and technically feasible, and show evidence of common sense. Alternatives that could not be implemented if they were chosen (for economic or technical reasons), or do not resolve the need for action and fulfill the stated purpose in taking action to a large degree, are therefore not considered reasonable.

The alternatives analyzed in this assessment have been divided under two locations, East State Park Road, and the Mt. Baldy Entrance Road. At East State Park Road the alternatives include one no action alternative and five build alternatives. The property to the west of East State Park Road is owned and managed by the Indiana Dunes State Park, not the National Lakeshore; therefore any decisions that would impact that property would continue to be coordinated with the State Park. At the Mt. Baldy Entrance Road the alternatives include one no action alternative and one build alternative.

2.1 EAST STATE PARK ROAD

The NPS initiated the project in the late 2003 as pavement rehabilitation. All of the Build alternatives include mill and overlay of the 1.24 miles of East State Park Road and pavement rehabilitation as needed. In the spring of 2004, when it became apparent that flooding was occurring more frequently and for longer durations, the scope of proposed work was expanded to address the inundation problem. The area to be improved would be determined during the design process, however all work would be done within an area determined from survey information and pavement condition information, which shows a dip in elevation and rougher pavement for approximately 1000 feet.

2.1.1 No Action Alternative

The CEQ has specified that one of the alternatives must be the "no action" alternative for two reasons. One is that it is almost always a viable choice in the range of alternatives, and the other is that it sets a baseline of existing impact that may be projected into the future against which to compare impacts of action alternatives.

Under the No Action Alternative, no pavement rehabilitation would take place on East State Park Road. Flooding would continue to occur on the roadway and likely worsen over time. The road base and pavement would likely continue to deteriorate, which would require patching, and the road may need to be closed periodically to traffic. Maintenance activities would continue on the roads. The town of Beverly Shores owns East State Park Road and therefore any decisions to close the road or reconfigure the road would be the responsibility of the town.

Build Alternatives

Property ownership at the intersection of East State Park Road and Beverly Drive creates a unique situation. The town of Beverly Shores owns East State Park Road and Beverly Drive. The National Park Service owns the land east of the road and has authority to maintain the roadways through the National Lakeshore. The State of Indiana owns the land west of East State Park Road, which is Indiana Dunes State Park. The entire intersection is surrounded by wetlands and the soils are inundated throughout the year. Four build alternatives have been proposed to address the deteriorating pavement and the safety hazard of standing water on the roadway. **While an environmentally preferred alternative can be determined at this time, a lack of road ownership by the Park makes choosing a Preferred Alternative inappropriate prior to public review.** After weighing all of the comments received previous to and during the 30-day public comment period, the National Lakeshore will then decide on the preferred alternative. A Statement of Findings regarding the impacts to wetlands will be prepared for the preferred alternative, and will be released for public comment for a minimum of 30 days.

Resource Protection Measures Common to All Alternatives - Wetlands

According to the *NPS Procedural Manual #77-1, Wetland Protection*, the NPS requires that after avoidance and minimization have been applied to the maximum extent, remaining wetland degradation or loss must be offset through wetland compensation. For the NPS, compensation refers primarily to restoring natural wetland functions in degraded or former natural wetland habitats on NPS lands. If the adverse impacts on wetlands from the entire project total 0.1 acres or more, then wetland compensation is required. However, if the adverse impacts on wetlands from the entire projects totals less than 0.1 acres, the wetland compensation is strongly encouraged, but may be waived if the loss of wetland functions is considered to be minimal.

Once a preferred alternative is selected and wetland impacts are totaled, a wetland compensation plan will be created. Also at this time a Statement of Findings for wetlands would be prepared according to Executive Order 11990, Protection of Wetlands, and NPS 77-1. At that time, the NPS will announce its preferred alternative and distribute the Statement of Findings for public comment for a period of 30 days.

Resource Protection Measures Common to All Alternatives – Vegetation

In order to avoid the inadvertent introduction of invasive species, all areas that are disturbed as a result of this project and need to be re-vegetated will be re-vegetated by or under the supervision of the National Lakeshore using locally native species.

2.1.2 Multiple-Culvert Alternative

The existing roadway would remain in place to ensure a solid base material, however some milling (removal of the top portion of the pavement) may be necessary to create a level base. In order to widen the roadway to current design standards, the material east of East State Park Road and on either side of Beverly Drive would be excavated, and rip-rap would be placed up to the elevation of the roadway. Culverts would be placed at the level of the roadway to allow water to

mimic its existing flow across the roadway. Fill material would be placed between the culverts and on top of the culverts according to design specifications. The number and size of the culverts would be determined during the design process. The water elevations on either side of the roadways would remain the same as the current water elevations. Fill material would be placed along the sides of the raised roadway to create shoulders that slope down to the existing ground elevation adjacent to the roadway. The new roadway would be constructed according to current design standards, therefore the raised roadway would be approximately 28 feet wide (two ten-foot lanes with 4-foot shoulders), which is 10 feet wider than the existing pavement. The length of the raised roadway would be no longer than 1,000 feet along East State Park Road, and no longer than 300 feet along Beverly Drive. The road would be raised a maximum of 6 feet to accommodate the placement of culverts. The exact dimensions and length of the roadway would be determined during the design process. In order to calculate the impact areas to compare the alternatives the following assumptions were used: a roadway height of 6 feet above the existing, a length of 1,300 feet for the raised roadway, and a slope ratio of 4:1 to the existing ground elevation.

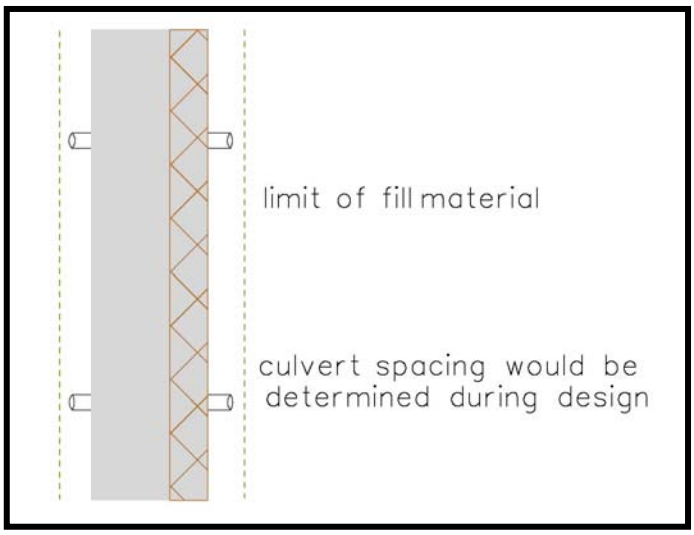

Figure 4. Multiple-Culvert Alternative

2.1.3 Multiple-Trench Drain Alternative

The existing concrete and asphalt pavement of East State Park Road and Beverly Drive would remain in place. In order to widen the roadway to current design standards, the material east of East State Park Road and on either side of Beverly Drive would be excavated, and rip-rap would be placed up to the elevation of the roadway. Multiple trench drains would be placed on top of the roadway in order to allow water to mimic its existing flow across the roadway. Fill material would be placed between the trench drains and asphalt pavement would be placed on top of the fill material and adjacent to the trench drains, so that the metal grate of the

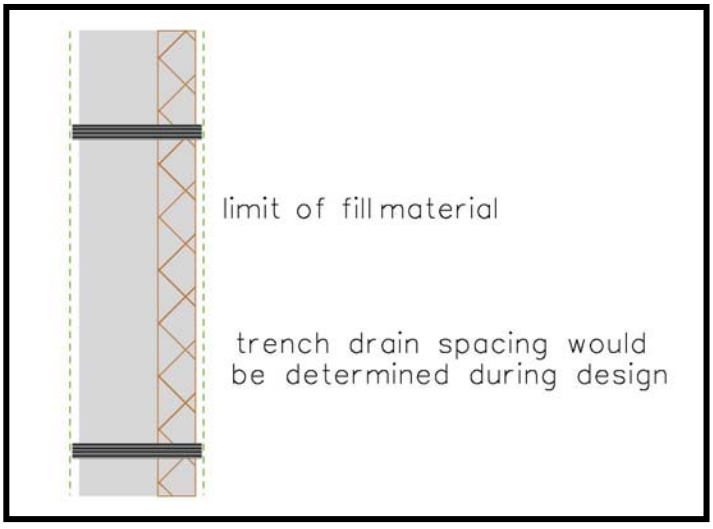

Figure 5. Multiple-Trench Drain Alternative

trench drains and asphalt surface would create a continuous driving surface. If determined as necessary during the design process, a headwall may be constructed on each side of the trench drain. The number of trench drains would be determined during the design process. The raised surface with trench drains across the roadway would extend no longer than 1,000 feet along East State Park Road, and no longer than 300 feet along Beverly Drive. These distances would also be determined during the design process. The new roadway would be constructed according to current design standards; therefore the raised roadway would be approximately 28 feet wide (two ten-foot lanes with 4-foot shoulders), which is 10 feet wider than the existing pavement. The roadway would be raised approximately 24 inches. In order to calculate the impact areas to compare the alternatives the following assumptions were used: a roadway height of 2.0 feet above existing, a length of 1,300 feet for the raised roadway, and a slope ratio of 4:1 to the existing ground elevation.

2.1.4 Obliteration Alternative

Approximately 200 feet of Beverly Drive from the East State Park Road intersection eastward would be obliterated, and so Beverly Drive would become a dead end at the existing parking area that serves the paved bird-watching trail. Visiting traffic could access the bird-watching trail via Broadway, which is located east of East State Park Road. Water would flow freely from the area northeast of the intersection to the area southeast of the intersection. The entire area of obliterated road would be used to create new wetland. This wetland area would be created through coordination with the National Lakeshore staff and similar to the ongoing mitigation efforts in the National Lakeshore. The ground elevation would blend into the wetland areas to the north and south of Beverly Drive, and native species would be used to re-vegetate the area.

2.1.5 Flow-Control Berm Alternative

An earth berm would be constructed parallel to East State Park Road, and a second berm parallel to Beverly Drive. A ditch would be constructed between the berm and road shoulder. Excavation would be required so that stronger fill material could be used to construct the berm. The height of the berm would equal the desired maximum water elevation that is preferred for the northeast wetland area.

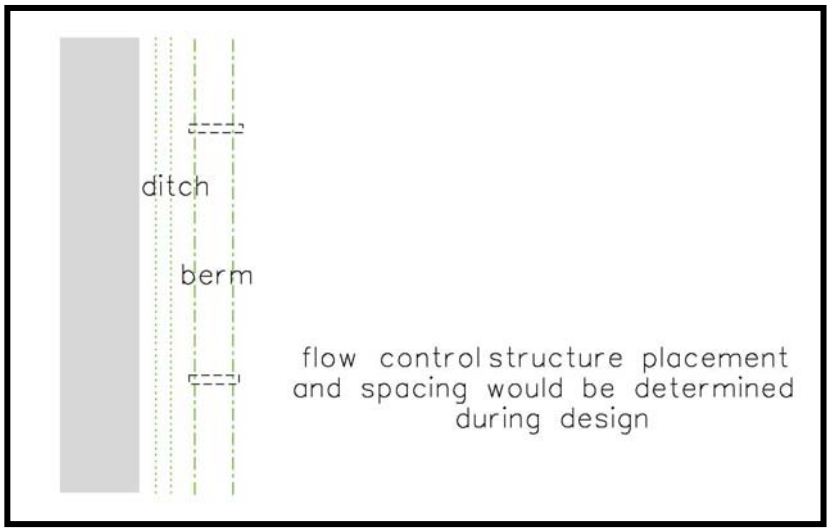

Figure 6. Flow-Control Berm Alternative

The berms would retain surface water in the wetland up to the maximum level, then would allow overflow to enter the ditch. A gate or alternative adjustable mechanism could be installed to allow the adjustment of the water level behind the berm. The width of the ditch and

berm are assumed to be a total of 10 feet for the purposes of this comparative analysis, however the exact dimensions would be determined during design. In order to calculate the impact areas to compare the alternatives the following assumptions were used: a berm and ditch width of 10 feet, and a length of 1,300 feet (East State Park Road and Beverly Drive).

Should the Flow-Control Berm Alternative be combined with the Multiple-Culvert Alternative or the Muliple-Trench Drain Alternative, the ditch would convey the excess flow to various culverts/drains under East State Park Road and Beverly Drive. The design option would exist to direct the entire flow directly under East State Park Road, instead of first flowing under Beverly Drive. Should the Flow-Control Berm Alternative be chosen in combination with the Obliteration Alternative, the berm would be extended south to a total length of 1000 feet, and because the berm would no longer extend along Beverly Drive, the impacts would be similar.

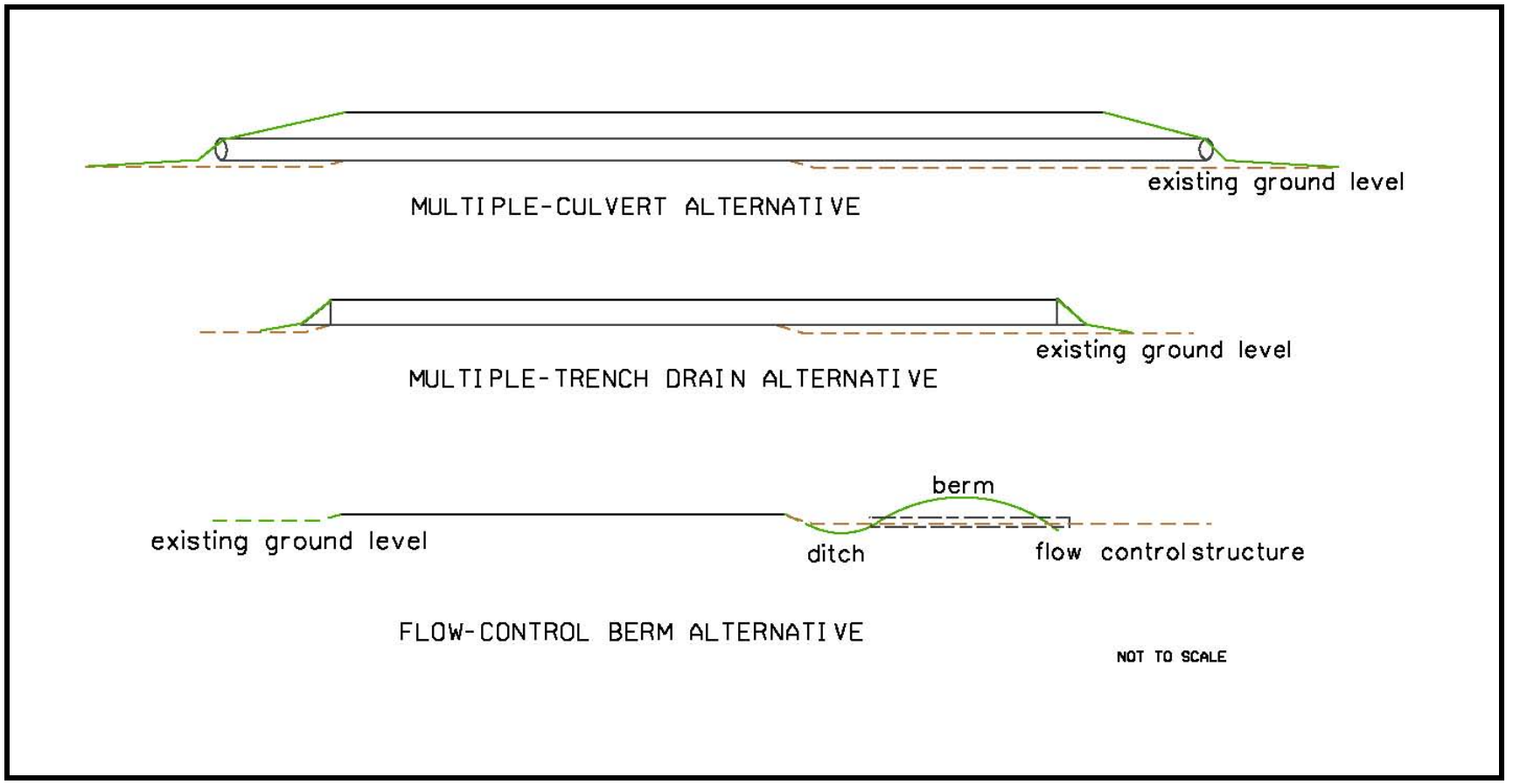

Figure 7. Comparison of East State Park Road – Beverly Drive Build Alternatives

2.2 MT. BALDY ENTRANCE ROAD

The Mt. Baldy Entrance Road is aligned at a very sharp angle at the intersection with U.S. Route 12. This creates poor sight conditions, which makes it difficult for drivers to see oncoming traffic. The sharp angle also creates difficult turn movements. In the area of the intersection of U.S. Route 12 and the Mt. Baldy entrance, the westbound lane of U.S. Route 12 disappears without warning on a curve into the Town of Beverly Shores. Correction of this issue is beyond the scope of this project.

2.2.1 No Action Alternative

The existing sharp angle of the intersection with U.S. Route 12 would continue to force a difficult left-turn maneuver for exiting vehicles. The poor sight condition would remain for vehicles exiting Mt. Baldy. The close proximity to the Beverly Drive intersection would retain a high potential for traffic conflicts with criss-crossing traffic. In the long term traffic would continue to have access to the Mt. Baldy Parking Area at the same level of service to which drivers are now accustomed.

2.2.2 Build Alternative (Preferred Alternative)

The intersection would be relocated approximately 100 feet to the previously disturbed area east of the existing location. The Mt. Baldy Entrance Road would be aligned to intersect at an approximate right-angle (a "T"-intersection). The pavement between the existing intersection and the proposed intersection would be obliterated, re-graded to natural contours, and re-vegetated. Appropriate traffic signage would be placed.

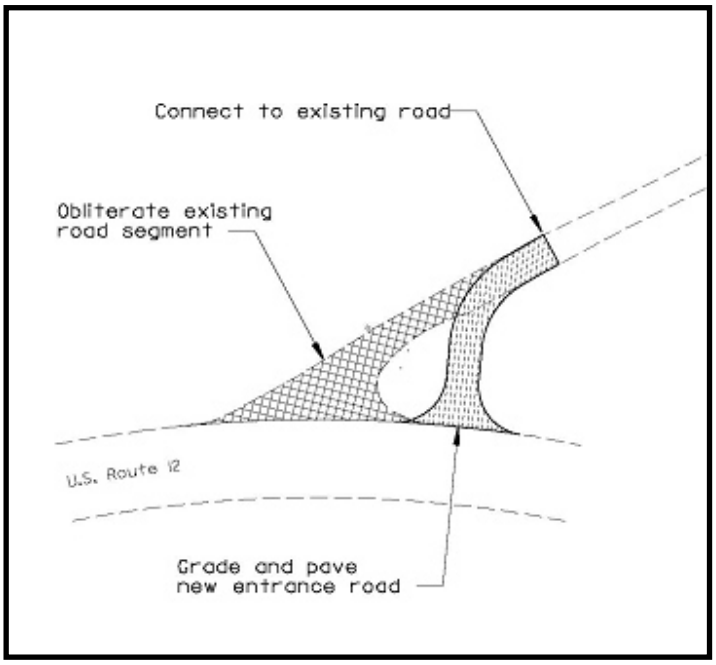

Figure 8. The relocated Mt. Baldy Entrance Road would align perpendicular to U.S. Route 12.

Resource Protection Measures of the Action Alternative - Visitor Experience

Road closures and detours shall be coordinated with the NPS and Town of Beverly Shores. The Mt. Baldy Entrance Road would always remain open to traffic on weekends and holidays, and from May through September.

2.3 ALTERNATIVES CONSIDERED BUT DISMISSED

As mentioned previously, alternatives should be "reasonable." Unreasonable alternatives should be eliminated before impact analysis begins. Unreasonable alternatives may be those that are unreasonably expensive; that cannot be implemented for technical or logistic reasons; that do not meet park mandates; that are inconsistent with carefully considered, up-to-date park statements of purpose and significance or management objectives; or that have severe environmental impacts (DO-12 Handbook).

East State Park Road – Viaduct Alternative

An elevated roadway constructed on pilings through the flood area or using side-by-side concrete spans to form a viaduct was considered as an alternative. Bridging of the flood area would eliminate the use of culverts. The elevated roadway would be constructed at the intersection of East State Park Road and Beverly Drive and would transition to the current roadway elevation. The viaduct would allow water to pass freely between either sides of the roadway, which would mimic historic surface hydrology (i.e. pre-construction of East State Park Road). The existing roadway would be obliterated and the ground underneath would be graded. The length of the viaduct would most likely be between 400 and 1000 feet long on East State Park Road and approximately 300 feet long on Beverly Drive.

This alternative was dismissed because of adverse impacts to the Indiana Dunes State Park, and high long-term cost and maintenance. Under the Viaduct Alternative water levels would drain from the northeast quadrant to the area west of East State Park Road, which would introduce additional water to the Indiana Dunes State Park. The Indiana Dunes State Park stated in a letter dated December 1, 2004 that, "State Park property on the west side of East State Park Road is dedicated as a State Nature Preserve, and state statute prohibits the disturbance or any taking of this property. Likewise altering the natural hydrology of a state dedicated preserve is also prohibited." Because this alternative would introduce water to the Indiana Dunes State Park, which would be against their requirements, this alternative was dismissed.

Mt. Baldy Entrance Road

An eastbound turning lane into the parking lot and a westbound passing blister were considered during the scoping process. A passing blister means an auxiliary lane constructed opposite of the driveway that enables through traffic to maneuver around vehicles turning left into a site. These alternatives were dismissed because most of the collisions in this area have been deer-vehicle collisions and the addition of a blister would not greatly improve safety.

2.4 ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is simply put, "this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources" (Q6a)(516 DM 6 4.10(A)(5).

East State Park Road

Without addressing the deteriorated roadway, the safety hazard of standing water on the roadway, and the unsafe intersection, the National Park Service would be unable to ensure that visitors would be able to safely access the Lakeshore and Mt. Baldy, therefore the No Action Alternative would not be the Environmentally Preferred Alternative.

The Multiple-Culvert Alternative would address the deteriorating roadway and the safety hazard of standing water on the roadway, however this alternative would introduce the largest amount of fill in order to raise the roadway and provide for appropriate road shoulders.

The Multiple-Trench Drain Alternative would address the deteriorating pavement and the safety hazard of standing water on the road. This alternative would also allow for the movement of water similar to the existing conditions without impacting the water elevations of the surrounding wetlands. The roadway would be raised less by the Multiple-Trench Drain Alternative than the Multiple-Culvert Alternative, which lessens the impacts to the wetlands and vegetation, while achieving the same end result of keeping water off of the roadway.

The Obliteration Alternative would address the deteriorating pavement and the safety hazard of standing water on the road. However, this alternative would affect the water level in the area northeast of the intersection, because with a portion of Beverly Drive removed water would be able to flow south and equalize. This alternative would also impact visitor use and experience because visitors would no longer be able to access East State Park Road via Beverly Drive. Therefore this alternative would not be most effective in achieving a balance between visitor and resource use.

The Flow-Control Berm Alternative would address the deteriorating pavement and the safety hazard of standing water on the road. However, this alternative would impact wetlands and vegetation during construction of the berm and may be difficult to construct due to the nature of the soils in the project area. Water levels may rise in the wetland area behind the berm, which may impact vegetation and wildlife.

Mt. Baldy Entrance Road

The Build Alternative for the Mt. Baldy Entrance Road would be preferred over the No Action Alternative because with the implementation of this alternative the National Park Service would be better able to protect the health, safety and welfare of the visitors and park staff by improving the sight distance at the intersection.

Conclusion

The Multiple-Trench Drain Alternative is the environmentally preferred alternative for the East State Park Road-Beverly Drive Intersection, and the Build Alternative is the environmentally preferred alternative for the Mt. Baldy Entrance Road.

Table 2.1. **Impact Summary for the East State Park Road Alternatives**					
Alternative Factor	No Action Alternative	Multiple-Culvert Alternative	Multiple-Trench Drain Alternative	Obliteration Alternative	Flow-Control Berm Alternative
Vegetation	No impacts to vegetation would occur.	Long-term minor adverse impact through placement of fill material.	Long-term minor adverse impact through placement of fill material.	Long-term negligible beneficial impact, as new vegetation would grow in obliterated area.	Short-term minor adverse impact through placement of fill material
Wildlife and Wildlife Habitat	No impacts to wildlife and wildlife habitat would occur.	Short-term minor adverse impact through construction activity and long-term negligible adverse impact through widening of roadway.	Short-term minor adverse impact through construction activity and long-term negligible adverse impact through widening of roadway.	Long-term minor beneficial impact as potential habitat would be created	Short-term minor adverse impact through habitat loss and construction activity
Wetlands	Long-term negligible adverse impacts through deposition of road sediment.	Long-term moderate adverse impact through placement of fill material.	Long-term minor adverse impact through placement of fill material.	Long-term negligible beneficial impact because 0.08 acres would be created from the obliterated area.	Short-term minor adverse impact through placement of fill material.
Local Area Flooding	No impacts to local area flooding would occur.	Long-term moderate beneficial impact because surface water would be directed through culverts.	Long-term moderate beneficial impact because surface water would flow through the trench drains.	Long-term negligible beneficial impact because water would flow between the north and south sides of Beverly Drive.	Long-term negligible beneficial impact as water would no longer flow from east to west.
Visitor Use and Experience	Long-term minor adverse impact because road condition would worsen over time.	Long-term minor beneficial impact because standing water and road condition issues would be addressed.	Long-term minor beneficial impact because standing water and road condition issues would be addressed.	Long-term minor adverse impact because visitors would no longer have access between Broadway and East State Park Road on Beverly Drive	Long-term negligible beneficial impact because standing water would decrease.
Visitor Conflicts and Safety	Long-term minor adverse impact because degradation in road condition and continued presence of standing water would increase visitor conflicts and safety concerns.	Long-term minor beneficial impact because raised roadway with no standing water issues would decrease safety concerns.	Long-term minor beneficial impact because a raised roadway with no standing water issues would decrease safety concerns.	Long-term negligible adverse impact because visitors would no longer have access between Broadway and East State Park Road on Beverly Drive.	Long-term negligible beneficial impact because standing water impacts would be reduced, decreasing safety concerns.

Table 2.2. Impact Summary for the Mt. Baldy Entrance Road Alternatives

Alternative Factor	No Action Alternative	Build Alternative
Vegetation	No impacts to vegetation would occur.	Short-term negligible adverse impact because the relocated section of roadway would be obliterated and re-vegetated.
Wildlife and Wildlife Habitat	No impacts to wildlife or wildlife habitat would occur.	Short-term minor adverse impact through construction activity.
Wetlands	No impact to wetlands would occur.	Long-term minor adverse impact through placement of fill material.
Visitor Use and Experience	Long-term negligible adverse impact because limited sight distance and difficult turn movements would continue.	Long-term minor beneficial impact because the intersection deficiencies would be addressed.
Visitor Conflicts and Safety	Long-term minor adverse impact because safety issues at intersection would continue.	Long-term minor beneficial impact because safety issues would be addressed.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

It is a requirement of NEPA that proposed actions by a Federal agency that significantly effect the environment are identified. In implementing NEPA, CEQ regulations state that "significantly" as used in NEPA requires considerations of context and intensity (1508.27). CEQ further states that context,

> *…means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.*

The regulations state that intensity "refers to the severity of impact." The regulations further state that:

> *The following should be considered in evaluating intensity:*
>
> 1. *Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.*
>
> 2. *The degree to which the proposed action affects public health or safety.*
>
> 3. *Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.*
>
> 4. *The degree to which the effects on the quality of the human environment are likely to be highly controversial.*
>
> 5. *The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.*
>
> 6. *The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.*
>
> 7. *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.*

8. *The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.*

9. *The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.*

10. *Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.*

For each impact topic identified in Section 2.1, a process for impact assessment was developed based on the directives of Section 4.5(g) of the DO-12 Handbook. National park system units are directed to assess the extent of impacts on park resources as defined by the context, duration, and intensity of the effect. While measurement by quantitative means is useful, it is even more crucial for the public and decision-makers to understand the implications of those impacts in the short and long term, cumulatively, and within context, based on an understanding and interpretation by resource professionals and specialists. With interpretation, one can ascertain whether a certain impact intensity to a park resource is "minor" compared to "major" and what criteria were used to base that conclusion.

Methodology

To determine impacts, methodologies were identified to measure the change in park resources that would occur with the implementation of each alternative. Thresholds were established for each impact topic to help understand the severity and magnitude of changes in resource conditions, both adverse and beneficial, of the various alternatives.

Potential impacts are described in terms of type (Are the effects beneficial or adverse?), context (Are the effects site-specific, local, or even regional?), duration (Are the effects short-term, lasting during construction, or long-term, lasting permanently?), and intensity (Are the effects negligible, minor, moderate, or major?). Because definitions of intensity (negligible, minor, moderate, or major) vary by impact topic, intensity definitions are provided separately for each impact topic analyzed in this document.

Each alternative is compared to a baseline to determine the context, duration, and intensity of resource impacts. For purposes of impact analysis, the baseline is the continuation of current management (the No Action Alternative) projected over the next 10 years. In the absence of quantitative data, best professional judgment was used to determine impacts. In general, the thresholds used come from existing literature, federal and state standards, and consultation with subject matter experts and appropriate agencies.

Cumulative Impacts

The CEQ regulations (40 CFR 1508.7) require the assessment of "cumulative impacts" which are defined as:

> *The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.*

In January 1997, the CEQ published a handbook entitled Considering Cumulative Effects Under the National Environmental Policy Act (see http://ceq.eh.doe.gov/nepa/ccenepa/ccenepa.htm). The introduction to the handbook opens with, "Evidence is increasing that the most devastating environmental effects may result not from the direct effects of a particular action, but from the combination of individually minor effects of multiple actions over time."

Cumulative impacts are considered for all alternatives, including the no-action alternative. They were determined by looking at each resource (impact topic), determining which past, present, and future actions would impact the resource for the determined spatial and temporal boundaries, and then combining the impacts of the alternative being considered with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects at the National Lakeshore and, if applicable, the surrounding region.

East State Park Road and Beverly Drive were originally constructed in approximately 1929. The Mt. Baldy Entrance Road was thought to have been constructed in the 1940's.

Historically, several waves of industry had major impacts to the Great Marsh. In the late 1800's, ditching and draining of the Great Marsh began in earnest to make the land available for agriculture and residential and industrial development. In the 1880's sand mining companies hauled huge quantities of sand for landfills and building industries. In 1916 the area was booming with industry in the form of steel mills and power plants; evident today by the presence of Midwest Steel and Bethlehem Steel, which divides the National Lakeshore East and West Units. All of these activities greatly reduced the acreage of wetlands making up the Great Marsh.

Work on restoring the wetlands of the Derby Ditch portion of the Great Marsh has been active since 1998. In response to restoration of wetland hydrology, terrestrial grasses, weedy trees, and brambles have died and invasive species such as Hybrid Cattail, Reed Canary Grass and Common Reed have started to fill the void. Future work will eradicate the above exotics, collect native seed, and propagate and install plants. As part of a wetland restoration effort, previous drainage ditches were "plugged". This effort took place in the area east of Derby Ditch in a separate watershed than the project location and is unrelated to the flooding at the intersection of East State Park Road and Beverly Drive.

Prior to the development of this area, naturally occurring fires cleared the dead wood and maintained prairie and savanna habitats. As civilization grew, so did efforts to repress these fires. This resulted in loss or alteration of open habitats as well as a loss of plant and animal diversity. The National Lakeshore conducts a prescribed burn program for restoring the area's prairies. A prescribed burn of 133 acres was conducted in the west side of Beverly Shores in the spring of 2006. The southern boundary of the burn was approximately 1170 feet from the East State Park Road – Beverly Drive intersection. Prescribed burns occur every 5-7 years.

Routine maintenance activities including mowing, invasive plant control, planting, and seeding are planned by the National Lakeshore. Maintenance activities, including pothole filling and mowing, would continue to be done on an as-needed basis by the town of Beverly Shores.

The town of Beverly Shores may be repairing Beverly Drive from Montana to Derby Ditch if $145,000 of additional funding is obtained. This work would include road rehabilitation to address deteriorated pavement east from Derby Ditch.

Impairment Analysis

The NPS *Management Policies* (NPS 2001a) require an analysis of potential effects to determine whether or not actions would impair park resources. The fundamental purpose of the national park system, as established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values. However, the laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the NPS the management discretion to allow certain impacts within a park system unit, that discretion is limited by the statutory requirement that the agency must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values.

An impact to any park resource or value may constitute an impairment, but an impact would be more likely to constitute an impairment to the extent that it has a major or severe adverse effect upon a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park; or
- identified as a goal in the park’s general management plan or other relevant NPS planning documents.

Impairment may result from NPS activities in managing the park, visitor activities, or activities undertaken by concessionaires, contractors, and others operating in the park.

The following process was used to determine whether the alternatives had the potential to impair park resources and values:

1. The National Lakeshore's enabling legislation, the *General Management Plan,* and other relevant background were reviewed with regard to the National Lakeshore's purpose and significance, resource values, and resource management goals or desired future conditions.
2. Thresholds were established for each resource of concern to determine the context, intensity and duration of impacts, as defined above.
3. An analysis was conducted to determine if the magnitude of impact reached the level of "impairment," as defined by NPS *Management Policies* (NPS 2001a).

The impact analysis includes any findings of impairment to park resources and values for each of the alternatives.

3.1 VEGETATION

Affected Environment

The National Lakeshore is one of the most floristically diverse lands within the National Park System. A unique feature is the frequent transition from one vegetation community to another within a relatively small area. The National Lakeshore provides habitat for 1,130 native vascular plants. The dunes landscape contains disjunct flora representative of eastern deciduous forests, boreal forest remnants, and species with Atlantic coast affinities. In addition, it is part of the upper- and eastern-most limits of the tallgrass prairie peninsula and supports high quality remnants of this ever-diminishing vegetation type. A stable oak forest characterizes the two outer dune complexes. The younger dune/shoreline area is still active and all stages of plant succession can be observed there. There are open beaches, grass covered dune ridges, blowouts, dunes with woody shrub vegetation, pine-forested dunes, oak-forested dunes, oak savannas, and prairies. Vegetation at the East State Park Road and Beverly Drive intersection is comprised primarily of red maple (*Acer Rubrum*), gray dogwood (*Cornus racemosa*), clearweed, (*Pilea pumila*), late goldenrod (*Solidago gigantea*), and horsetail (*Equisetum arvense*). Vegetation at the intersection of U.S.12 and Beverly Drive is comprised primarily of black oak (*Quercus velutina*), glossy buckthorn (*Frangula alnus*), Canada bluegrass (*Poa compressa*), and late goldenrod.

Regulations and Policies

NPS *Management Policies* (NPS 2001a; Section 4.4.2.1) provides guidance on the removal of plants from parks. It states that when the NPS allows the removal of plants for any authorized action, the NPS will seek to "ensure that such removals will not cause unacceptable impacts on native resources, natural processes, or other park resources." Additionally, the NPS "will manage such removals to prevent them from interfering broadly with: natural habitats, natural

abundances, and natural distributions of native species and natural processes; rare, threatened, and endangered plant or animal species or their critical habitats; scientific study, interpretation, environmental education, appreciation of wildlife, or other public benefits; opportunities to restore depressed populations of native species; or breeding or spawning grounds of native species."

Methodology

Available information on vegetation and vegetative communities potentially impacted by the proposed alternatives was compiled by talking to the National Lakeshore natural resource staff, consulting resource management documents, and correspondence with the Indiana Department of Natural Resources. To the extent possible, location of sensitive vegetation species, populations, and communities were identified and avoided. Predictions about short-term and long-term impacts to vegetation were based on previous experience of projects of similar scope and vegetative characteristics. Analyses of the potential intensity of impacts on vegetation were derived from the available information on the Park and the professional judgment of the Park Staff. The construction of a build alternative would most likely be two years or less, therefore the duration of the short term duration is two years.

Definition of Intensity Levels:

Negligible	Minor	Moderate	Major
No native vegetation would be affected or some individual native plants could be affected as a result of the alternative, but there would be no effect on native species populations. The effects would be on a small scale and no sensitive vegetation communities would be affected.	The alternative would affect some individual native plants and would also affect a relatively minor portion of that species' population. Mitigation to offset adverse effects, including special measures to avoid affecting sensitive vegetation communities, could be required and would be effective.	The alternative would affect some individual native plants and would also affect a sizeable segment of the species' population and over a relatively large area. Mitigation to offset adverse effects could be extensive, but would likely be successful. Some sensitive vegetation communities could also be affected.	The alternative would have a considerable effect on native plant populations, including sensitive vegetation communities, and affect a relatively large area in and out of the park. Mitigation measures to offset the adverse effects would be required, extensive, and success of the mitigation measures would not be guaranteed.

Definition of Duration:

Short-term: Effects lasting less than 2 years
Long-term: Effects lasting longer than 2 years

Cumulative Impacts

The spatial boundary for the cumulative impacts assessment has been defined as the contiguous palustrine emergent wetland and forested wetland area surrounding the intersection of East State Park Road and Beverly Drive as well as the palustrine scrub-shrub vegetated area which makes up the Great Marsh, and the vegetation north to Lake Michigan. The temporal boundary for the

cumulative impacts assessment has been defined as from the construction of roads through 10 years in the future.

Past actions that would have contributed to cumulative impacts include:
Construction of roadways through this area,
Construction of ditches to drain the Great Marsh, and the
Construction of the Town of Beverly Shores (including housing and businesses).

Present and future actions that would contribute to cumulative impacts include:
Plugging of the ditches to restore wetland habitat (also a past action),
Prescribed burns (also a past action), and the
Repair of Beverly Drive.

These actions combined would have a minor adverse impact to the vegetation because although the plugging of ditches and prescribed burns are restoring the vegetation that was impacted by the construction of ditches and construction projects, the vegetation would still be permanently impacted by the construction of homes and roads.

Environmental Effects

3.1.1 East State Park Road

No Action Alternative

The No Action Alternative would not impact vegetation because repairs to the deteriorating roadway would be limited to the existing pavement.

Conclusions. The No Action Alternative would have no impact to vegetation. The No Action Alternative combined with the cumulative actions would have a minor adverse impact to vegetation. Vegetation would not be impaired as a result of the No Action Alternative.

Multiple-Culvert Alternative

Vegetation would be impacted during construction as construction vehicles access the project area to excavate the area adjacent to the existing road. The placement of fill material to raise the roadway and install culverts at the road height, widen the roadway to 28 feet, and create road shoulders would directly disturb approximately 1.73 acres of surrounding vegetation. The widening of the roadways would permanently disturb approximately 0.30 acres of vegetation, causing a long-term minor adverse impact. Approximately 1.43 acres (shoulders and fill slopes to the existing ground elevation) would be re-vegetated. Vegetation may not return to the existing species because of the change in ground elevation and hydrology.

Conclusions. The Multiple-Culvert Alternative would have a long-term minor adverse impact to vegetation. The Multiple-Culvert Alternative combined with the cumulative actions would have a minor adverse impact to vegetation. Vegetation would not be impaired as a result of the Multiple-Culvert Alternative.

Multiple-Trench Drain Alternative

The area east of East State Park Road and on both sides of Beverly Drive would be excavated in order to place rip-rap to support the trench drains and new roadway (including road shoulders). This would impact approximately 0.78 acres of vegetation. Of the 0.78 acres impacted, 0.30 acres would be permanently impacted for the road widening, while 0.48 acres, which makes up the roadway shoulders and fill slope to the existing ground elevation would be re-vegetated. The Multiple-Trench Drain Alternative would have a long-term minor adverse impact to vegetation, because although the vegetation trampled by construction equipment would recover in a growing season, approximately 0.30 acres of vegetation would be permanently removed.

Conclusions. The Multiple-Trench Drain Alternative would have a long-term minor adverse impact to vegetation. The Multiple-Trench Drain Alternative combined with the cumulative actions would have a minor adverse impact to vegetation. Vegetation would not be impaired as a result of the Multiple-Trench Drain Alternative.

Obliteration Alternative

The obliteration of 200 feet of Beverly Drive would result in short-term negligible adverse impacts to vegetation during demolition because the vegetation surrounding the project area may be trampled by construction equipment accessing the project area. The removal of 0.08 acres of impervious surface would result in a permanent increase in vegetated area by approximately the same amount (0.08 acres) because this area would be re-vegetated. This alternative would have a long-term negligible beneficial impact to vegetation.

Conclusions. The Obliteration Alternative would have long-term negligible beneficial impacts. The Obliteration Alternative combined with the cumulative actions would have a minor adverse impact to vegetation. Vegetation would not be impaired as a result of the Obliteration Alternative.

Flow-Control Berm Alternative

The construction of the ditch and earth berms would disturb the surrounding habitat because construction equipment would trample vegetation when accessing the project area, and because of excavation would be needed in order to place fill material to construct the berm. It is estimated that 0.30 acres of vegetation would be disturbed, causing a short-term minor impact to vegetation. The entire ditch and berm would be re-vegetated and it is likely that wetland vegetation would return to the berm and ditch.

Conclusions. The Flow-Control Berm Alternative would have a short-term minor impact to vegetation. The Flow-Control Berm Alternative combined with the cumulative actions would have a minor adverse impact to vegetation. Vegetation would not be impaired as a result of the Flow-Control Berm Alternative.

3.1.2 Mt. Baldy Entrance Road

No Action Alternative

The No Action Alternative would not impact vegetation.

Conclusions. The No Action Alternative would not impact vegetation. The No Action Alternative combined with the cumulative actions would have a minor adverse impact to vegetation. Vegetation would not be impaired as a result of the No Action Alternative.

Build Alternative

The relocation of the intersection would disturb approximately 0.30 acres of vegetation within the Park. The obliterated section would be re-graded to natural contours and re-vegetated with native species. The obliterated section with new vegetation would be approximately the same size as the relocated section, which removed vegetation; therefore this alternative would have a short-term negligible adverse impact to vegetation.

Conclusions. The Build Alternative would have a short-term negligible adverse impact to vegetation. The Build Alternative combined with the cumulative actions would have a minor adverse impact to vegetation. Vegetation would not be impaired as a result of the Build Alternative.

3.2 WILDLIFE AND WILDLIFE HABITAT

Affected Environment

Biological diversity is one of the most significant features of the National Lakeshore. Because it is located in several ecological transition zones, the diversity is many times greater than that of most areas of similar size. Remnant species from past climatic changes have managed to survive in sheltered habitats throughout the lakeshore. The moderating effect of Lake Michigan along with the great variety of habitats within a small area explain much of the plant and animal diversity found in the dunes. The exceptional biological diversity was a primary reason for the National Lakeshore's establishment.

Thirty-seven species of mammals have been documented at the National Lakeshore. The largest herbivore in the Park is the white-tailed deer, and the largest predator is the coyote. Three-hundred-and-fifty-two species of birds have been identified in the National Lakeshore area. Of these, 113 are considered regular nesters. The National Lakeshore provides habitat for a great blue heron rookery. Eighteen species of amphibians are found in the National Lakeshore. Park visitors can hear several different species of frogs and toads calling during the spring and summer. Twenty-seven species of reptiles have been documented. People hiking through dunes and blowouts may catch a glimpse of the six-lined racerunner, a type of lizard, darting through the grass. An inventory of invertebrates has not been completed, but the Park has about 100 different species of lepidoptera (butterflies and moths) and 60 species of odonata (dragonflies

and damselflies). The National Lakeshore provides critical habitat for the Federally-listed endangered Karner blue butterfly.

The wetland in the northeast section of the East State Park Road-Beverly Drive intersection supports a greater diversity and abundance of wildlife than other wetlands west and southeast of the intersection. This is likely due to the relatively higher water level in the northeast section. Twelve years of surveys for rails (small to medium-sized wetland birds), indicates that in the northeast wetland area, sora rails (*Porzana carolina*) are twice as abundant as in the wetland west of the intersection and two to five times more abundant than in the wetland southeast of the intersection. Virginia rails (*Rallus limicola*) are approximately a third more abundant in the area northeast of the intersection as they are in the wetlands west of East State Park Road. In addition, the northeast wetland is frequently used by waterfowl and wading birds (herons, egrets), particularly during migration periods. Surveys for amphibians indicate that seven amphibian species have been recorded east of East State Park Road, but only four species have been recorded from the areas west of East State Park Road. In addition, the volume of amphibian calls (an indication of abundance), suggests that amphibians east of East State Park Road are substantially more abundant than in areas west of the road.

Regulations and Policies

The NPS Organic Act, which directs parks to conserve wildlife unimpaired for future generations, is interpreted by the agency to mean that native animal life should be protected and perpetuated as part of the park's natural ecosystem. Natural processes are relied on to control populations of native species to the greatest extent possible; otherwise they are protected from harvest, harassment, or harm by human activities. According to Section 4.1 of NPS *Management Policies* (NPS 2001a), the restoration of native species is a high priority. Management goals for wildlife include maintaining components and processes of naturally evolving park ecosystems, including natural abundance, diversity, and the ecological integrity of plants and animals. Section 4.1.5 of *Management Policies* compels NPS to restore natural conditions and processes to human-disturbed lands. Domestic livestock and other exotic species are permitted (Section 4.4.4.1), so long as they are managed to prevent unacceptable impacts on park natural resources.

Methodology

Available information on wildlife and wildlife habitat communities potentially impacted by the proposed alternatives was compiled by talking to park natural resource staff, consulting resource management documents, and correspondence with the Indiana Department of Natural Resources. Species surveys were performed by the National Lakeshore to determine the extent of diversity in the East State Park Road – Beverly Drive intersection. To the extent possible, location of sensitive wildlife or wildlife habitat were identified and avoided. Predictions about short-term and long-term impacts to wildlife and wildlife habitat were based on previous experience of projects of similar scope and vegetative characteristics. Analyses of the potential intensity of impacts on wildlife or wildlife habitat were derived from the available information on the Park and the professional judgment of the Park Staff. The construction of a build alternative would most likely be two years or less, therefore the duration of the short term duration is two years.

Definition of Intensity Levels:

Negligible	Minor	Moderate	Major
Wildlife and their habitats would not be affected or the effects would be at or below the level of detection and would not be measurable or of perceptible consequence to wildlife populations	Effects on wildlife or habitats would be measurable or perceptible, but localized within a small area. While the mortality of individual animals might occur, the viability of wildlife populations would not be affected and the community, if left alone, would recover.	A change in wildlife populations or habitats would occur over a relatively large area. The change would be readily measurable in terms of abundance, distribution, quantity, or quality of population. Mitigation measures would be necessary to offset adverse effects, and would likely be successful.	Effects on wildlife populations or habitats would be readily apparent, and would substantially change wildlife populations over a large area in and out of the national park. Extensive mitigation would be needed to offset adverse effects, and the success of mitigation measures could not be assured.

Definition of Duration:

Short-term: Effects lasting less than 2 years
Long-term: Effects lasting longer than 2 years

Cumulative Impacts

The spatial boundary for the cumulative impacts assessment has been defined as the contiguous area, which makes up the Great Marsh, and the area north to Lake Michigan. This area is similar in characteristic due to the vegetation found here, and it is assumed that the wildlife and wildlife habitat would be of a similar nature. The temporal boundary for the cumulative impacts assessment has been defined as from the construction of roads through 10 years in the future.

Past actions that would have contributed to cumulative impacts include:
Construction of roadways through this area,
Construction of ditches to drain the Great Marsh, and the
Construction of the Town of Beverly Shores (including housing and businesses).

Present and future actions that would contribute to cumulative impacts include:
Plugging of the ditches to restore wetland habitat (also a past action),
Prescribed burns (also a past action), and the
Repair of Beverly Drive.

These actions combined would have a minor adverse impact to wildlife and wildlife habitat because although the plugging of ditches and prescribed burns are restoring the vegetation that was impacted by the construction of ditches and construction projects, wildlife and wildlife habitat would still be permanently impacted by the construction of homes and roads which would limit their habitat and migration.

Environmental Effects

3.2.1 East State Park Road

No Action Alternative

The No Action Alternative would have a long-term negligible adverse impact to wildlife and wildlife habitat from the road/vehicle pollutants continuing to wash into the adjacent habitat.

Conclusions. The No Action Alternative would have a long-term negligible adverse impact to wildlife and wildlife habitat. The No Action Alternative combined with the cumulative actions would have a minor adverse impact to wildlife and wildlife habitat. Wildlife and wildlife habitat would not be impaired as a result of the No Action Alternative.

Multiple-Culvert Alternative

The Multiple-Culvert Alternative would have a short-term minor adverse impact on wildlife and wildlife habitat because of the increased light and noise in the project area during construction. Approximately 1.43 acres of habitat would be temporarily impacted through the placement of fill material to construct road shoulders and fill slopes. Similar habitat is present throughout the Park and would remain protected under current management plans, therefore wildlife could relocate to the surrounding areas. After construction is completed this area would be re-vegetated and wildlife is expected to return. There would also be a long-term negligible adverse impact due to the wildlife habitat that would be permanently impacted by the widening of the roadway to meet current standards, which would convert approximately 0.30 acres of habitat adjacent to the roadway to pavement. Locating the culverts at the height of the road to mimic existing hydrology would minimize impacts to the biologically diverse area northeast of the intersection because the water levels would not change.

Conclusions. The Multiple-Culvert Alternative would have a short-term minor adverse impact and a long-term negligible adverse impact to wildlife and wildlife habitat. The Multiple-Culvert Alternative combined with the cumulative actions would have a minor adverse impact to wildlife and wildlife habitat. Wildlife and wildlife habitat would not be impaired as a result of the Multiple-Culvert Alternative.

Multiple-Trench Drain Alternative

The Multiple-Trench Drain Alternative would have a short-term minor adverse impact to wildlife and wildlife habitat because of the increased light and noise in the project area during construction. Approximately 0.48 acres of habitat would be temporarily impacted through the placement of fill material to construct road shoulders and fill slopes, however wildlife would be able to migrate back to this area after construction and re-vegetation is completed. There would also be a long-term negligible adverse impact because of the permanent impact to 0.30 acres of habitat adjacent to the roadways due to the excavation and placement of fill material for pavement widening, although wildlife would be able to migrate to similar habitat nearby. Locating the trench drain invert elevations at the height of the road to mimic existing

hydrology would minimize impacts to the biologically diverse area northeast of the intersection because the water levels would not change.

Conclusions. The Multiple-Trench Drain Alternative would have a short-term minor adverse impact and a long-term negligible adverse impact to wildlife and wildlife habitat. The Multiple-Trench Drain Alternative combined with the cumulative actions would have a minor adverse impact to wildlife and wildlife habitat. Wildlife and wildlife habitat would not be impaired as a result of the Multiple-Trench Drain Alternative.

Obliteration Alternative

There would be a short-term negligible adverse impact to wildlife as they may avoid potential habitat adjacent to the project site during construction because of increase light and noise. The 0.08-acre increase in available vegetated area will provide increased wildlife habitat east of East State Park Road, therefore Obliteration Alternative would have a long-term minor beneficial impact to wildlife and wildlife habitat.

Conclusions. The Obliteration Alternative would have a long-term minor beneficial impact to wildlife and wildlife habitat. The Obliteration Alternative combined with the cumulative actions would have a minor adverse impact to wildlife and wildlife habitat. Wildlife and wildlife habitat would not be impaired as a result of the Obliteration Alternative.

Flow-Control Berm Alternative

The construction of the ditch and earth berm would result in a short-term minor adverse impact to the wildlife and wildlife habitat because of the presence of construction equipment causing increased noise and light, and because of the excavation to construct the ditch and berm. Wildlife may avoid potential habitat adjacent to the project site during construction, however similar wetland habitat is available throughout the Great Marsh Swamp area. It is estimated that 0.30 acres of vegetation within the Park would be disturbed by the proposed work. The entire ditch and berm would mostly likely return to wetland vegetation and potential habitat.

Conclusions. The Flow-Control Berm Alternative would have a short-term minor adverse impact to wildlife and wildlife habitat. The Flow-Control Berm Alternative combined with the prescribed burn and Beverly Drive repair project would have a short-term minor adverse impact to wildlife and wildlife habitat. Wildlife and wildlife habitat would not be impaired as a result of the Flow-Control Berm Alternative.

3.2.2 Mt. Baldy Entrance Road

No Action Alternative

The No Action alternative would have no impact on wildlife or wildlife habitat.

Conclusions. The No Action would have no impact on wildlife or wildlife habitat. The No Action Alternative combined with the cumulative actions would have minor adverse impacts to

wildlife and wildlife habitat. Wildlife and wildlife habitat would not be impaired as a result of the No Action Alternative.

Build Alternative

The proposed relocation of the intersection would have short-term minor adverse impacts to wildlife and wildlife habitat due to the disturbance of 0.30 acres of vegetated area during construction. The obliterated section would be re-graded to natural contours and re-vegetated with native species. Similar habitat is present throughout the National Lakeshore for wildlife to inhabit.

Conclusions. The Build Alternative would have short-term minor adverse impacts to wildlife and wildlife habitat. The Build Alternative combined with the cumulative actions would have minor adverse impacts to wildlife and wildlife habitat. Wildlife and wildlife habitat would not be impaired as a result of the Build Alternative.

3.3 WETLANDS

Affected Environment

To determine if potential wetlands exist within the study area, National Wetland Inventory (NWI) mapping and the National Resources Conservation Service's (NRCS) Soil Survey were reviewed for Porter and La Porte Counties and a wetland delineation was performed to delineate the boundaries of "waters of the United States," including wetlands, which occur within the National Lakeshore rights-of-way along the intersection of East State Park Road and Beverly Drive in Porter County and the intersection of the Mt. Baldy Entrance Road and U.S. Route 12 in La Porte County.

During the jurisdictional delineation in June of 2005, six wetlands totaling 15.41 acres and two ditches, both within wetlands, were identified on the Porter County site. NWI maps show that the area surrounding East State Park Road at the intersection of Beverly Drive is surrounded by PEMF (palustrine emergent semipermanently flooded) and PFO1C (palustrine forested broad leaf deciduous seasonally flooded) Cowardin classifications of wetlands. The delineation verifies the presence of jurisdictional wetlands, therefore any impacts to the wetlands at this site would reflect both Corps jurisdictional wetlands and Cowardin wetlands.

At the intersection of Mt. Baldy Entrance Road and U.S. Route 12, one jurisdictional wetland totaling 0.06 acre and one ditch located outside the wetland were identified. NWI maps show the 0.06-acre wetland as PSS1F (semipermanently flooded palustrine shrub scrub broad leaf deciduous) under the Cowardin classification system, but no other Cowardin classified wetlands in the project area. Soil survey maps show the project area, with the exception of the 0.06-acre wetland, as Oakville fine sand, which is not a hydric soil.

The wetlands in the project area are part of a larger context of the Great Marsh, an extensive wetland complex. The Great Marsh consists of approximately 3, 270 acres. This area has historically been ditched and drained however several efforts in the area have been in the process

of restoring the Great Marsh. The National Lakeshore is in the process of restoring portions of the Great Marsh south of the primary dunes in the eastern half of the Park. The goal is to re-create a diverse and attractive ecosystem by plugging ditches, restoring the area's hydrology, removing invasive plants, and planting native species.

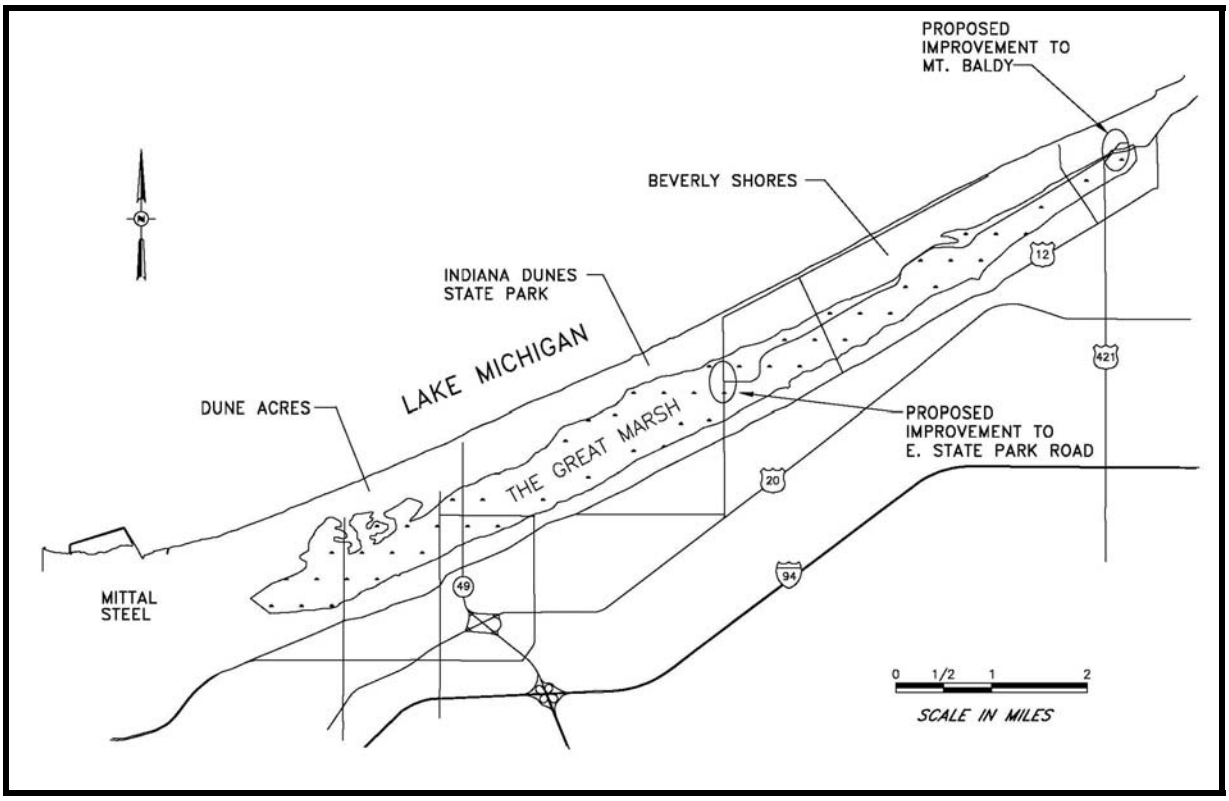

Figure 9. The approximate boundary of the Great Marsh is shown above.

Regulations and Policies

NPS *Management Policies* (NPS 2001a, Section 4.6.5) and Executive Order 11990 "Protection of Wetlands" direct the NPS to minimize and mitigate the destruction, loss, or degradation of wetlands; preserve, enhance, and restore the natural and beneficial values of wetlands; and avoid direct and indirect support of new construction in wetlands unless there are no practicable alternatives and the proposed action includes all practicable measures to minimize harm to wetlands. The Clean Water Act (CWA) of 1972 was created to restore and maintain waters of the United States. Several sections of the CWA are applicable to activities in or near waters of the United States, including both navigable waters and adjacent wetlands.

Methodology

Available information on wetlands potentially impacted by the proposed alternatives was compiled from a wetland delineation done in 2005 and by talking to park natural resource staff. Predictions about short-term and long-term impacts to wetlands were based on previous

experience of projects of similar scope and characteristics. Analyses of the potential intensity of impacts on wetlands were derived from the available information on the Park and best professional judgment. The wetland acreage figures for the intensity levels were selected in relation to the scope of the improvements to the intersection and impacts to the adjacent bio-diverse wetland. The construction of a build alternative would most likely be two years or less, therefore the duration of the short term duration is two years.

Definition of Intensity Levels:

Negligible	Minor	Moderate	Major
The effects would be below or at the lower levels of detection (0.0 to 0.09 acres). The acreage of wetlands filled would be between.	The effects to wetlands would be detectable and relatively small in terms of area (0.10 to 0.99 acres) and the nature of the change. The action would affect a limited number of individuals of plant or wildlife species within the wetland.	The effects to wetlands would be readily apparent over a relatively small area (1.0 acres to 4.9 acres) but the impact could be mitigated by restoring previously degraded wetlands. The action would have a measurable effect on plant or wildlife species within the wetland, but all species would remain indefinitely viable.	The effects to wetlands would be readily apparent over a relatively large area (5.0 acres or more). The action would have measurable consequences for the wetland area that could not be mitigated. Wetland species dynamics would be upset, and plant and/or animal species would be at risk of extirpation from the area.

Definition of Duration:

Short-term: Effects lasting less than 2 years
Long-term: Effects lasting longer than 2 years

Cumulative Impacts

The spatial boundary for the cumulative impacts assessment has been defined as the contiguous palustrine emergent wetland and forested wetland area surrounding the intersection of East State Park Drive and Beverly Drive as well as the palustrine scrub-shrub vegetated area, which were delineated in 2005. The temporal boundary for the cumulative impacts assessment has been defined as from the construction of roads through 10 years in the future.

Past actions that would have contributed to cumulative impacts include:
Construction of roadways through this area, and the
Construction of ditches to drain the Great Marsh.

Present and future actions that would contribute to cumulative impacts include:
Plugging of the ditches to restore wetland habitat (also a past action).

These actions combined would have a minor adverse impact to the vegetation because although the plugging of ditches is restoring the wetlands that were impacted by the construction of ditches and construction projects, the wetlands would still be permanently impacted by the construction of roads.

Environmental Effects

3.3.1 East State Park Road

No Action Alternative

The No Action alternative would have long-term negligible adverse impacts to wetlands because the continued deterioration of the road may facilitate increased sediment and asphalt deposits in adjacent marshes or wetlands.

Conclusions. The No Action Alternative would have a long-term negligible adverse impact to wetlands. The No Action Alternative combined with the cumulative actions would have a minor adverse impact to wetlands. Wetlands would not be impaired as a result of the No Action Alternative.

Multiple-Culvert Alternative

In order to access the project area and construct this alternative, heavy construction equipment would move through the area, causing the trampling of vegetation and compaction of soils. The areas adjacent to the roadway would be excavated, and the existing soils and vegetation would be removed in order to construct the elevated roadway and its shoulders. The placement of fill material to construct the road (including the slope to the existing ground elevation) would directly impact approximately 1.50 acres of wetlands, therefore causing a long-term moderate adverse impact. Over time, wetland vegetation would likely return to portions of the fill area, lessening the impact to the wetlands.

Conclusions. The Multiple-Culvert Alternative would have a long-term moderate adverse impact to wetlands. The Multiple-Culvert Alternative combined with the cumulative actions would have a moderate adverse impact to wetlands. Wetlands would not be impaired as a result of the Multiple-Culvert Alternative.

Multiple-Trench Drain Alternative

In order to access the project area and construct this alternative, heavy construction equipment would access the area, causing the trampling of vegetation and compaction of soils. The excavation and placement of rip-rap in order to widen the roadway and construct shoulders for the installation of the trench drains would directly impact approximately 0.78 acres of wetlands. Approximately 0.30 acres of impact would be permanent due to the placement of asphalt to widen the roadway, however portions of the 0.48-acre slopes to the existing ground elevation may return to wetlands. The Multiple-Trench Drain Alternative would have a long-term minor adverse impact to wetlands because of the direct impact to the wetlands adjacent to East State Park Road and Beverly Drive.

Conclusions. The Multiple-Trench Drain Alternative would have a long-term minor adverse impact to wetlands. The Multiple-Trench Drain Alternative combined with the combined actions

would have a minor adverse impact to wetlands. Wetlands would not be impaired as a result of the Multiple-Trench Drain Alternative.

Obliteration Alternative

The Obliteration Alternative would have a long-term negligible beneficial impact to wetlands because approximately 0.08 acres of roadway would be removed and this area would be graded to revert to wetlands.

Conclusions. The Obliteration Alternative would have a long-term negligible beneficial impact to wetlands. The Obliteration Alternative combined with the cumulative actions would have minor adverse impacts to wetlands. Wetlands would not be impaired as a result of the Obliteration Alternative.

Flow-Control Berm Alternative

In order to access the project area and construct this alternative, heavy construction equipment would move through the area, causing the trampling of vegetation and compaction of soils. The excavation of the silt and organic material adjacent to the roadway and filling this area would directly impact approximately 0.25 acres of the wetlands. The presence of standing water adjacent to the berm and in the ditch, as well as the surrounding wetland vegetation would likely cause the ditch and berm to become wetlands after the construction is completed. The construction of a berm adjacent to the roadway (separated by a ditch) would have short-term minor adverse impacts to wetlands during the construction.

Conclusions. The Flow-Control Berm Alternative would have short-term minor adverse impacts to wetlands. The Flow-Control Berm Alternative combined with the cumulative actions would have minor adverse impacts to wetlands. Wetlands would not be impaired as a result of the Flow-Control Berm Alternative.

3.3.2 Mt. Baldy Entrance Road

No Action Alternative

The No Action Alternative would have no impact on wetlands.

Conclusions. The No Action Alternative would have no impact on wetlands. The No Action Alternative combined with the cumulative actions would have a minor adverse impact on wetlands. Wetlands would not be impaired as a result of the No Action Alternative.

Build Alternative

The Build Alternative would have no impact on wetlands because the relocation of the intersection would be on the north side of U.S. Route 12, and the wetland is located on the south side of U.S. Route 12.

Conclusions. The Build Alternative would have no impact on wetlands. The Build Alternative combined with the cumulative actions would have a minor adverse impact on wetlands. Wetlands would not be impaired as a result of the Build Alternative.

3.4 LOCAL AREA FLOODING

Affected Environment

Natural drainage from the Great Marsh near Beverly Shores is through the Dunes Creek drainage basin that empties into Lake Michigan about 2.5 miles west of Beverly Shores. Monthly averages of precipitation show the two wettest months as June and July with over four inches of precipitation, and the two driest months as January and February, with less than two inches of precipitation. The monthly average low temperature from December through March is below freezing.

During a site visit in October of 2005, it was found that the area north of Beverly Drive and east of East State Park Road was semipermanently flooded, and inundated with up to four inches of water. The area south of Beverly Drive and east of East State Park Road was semipermanently flooded and saturated to the surface. The area west of East State Park Road was semipermanently flooded with free water at the surface. These wet areas are directly adjacent to the roadway. During the late winter and spring, water routinely overtops the roadway up to a height of approximately 12 inches. Water also flows onto the roadway periodically during the autumn months. The shallow surface water appears to flow from east to west, and it is lower on the west side than on the east side. No recorded data are known to exist to quantify the current and previous flooding volumes, the duration of the flooding, or the source of the flooding.

The intersection of the Mt. Baldy Entrance Road and U.S. Route 12 does not experience local area flooding. The No Action and Build Alternative could not impact local area flooding because it does not exist, therefore the alternatives will not be analyzed under this impact topic.

Methodology

Available information on wetlands potentially impacted by the proposed alternatives was compiled by talking to park natural resource staff, and wetlands in the project area were delineated in 2005. Predictions about short-term and long-term impacts to wetlands were based on previous experience of projects of similar scope and characteristics. Analyses of the potential intensity of impacts on wetlands were derived from the available information on the Park and best professional judgment. The construction of a build alternative would most likely be two years or less, therefore the duration of the short term duration is two years.

Definition of Intensity Levels:

Negligible	Minor	Moderate	Major
Local area flooding would not be affected, or changes would be either non-detectable or if detected, would have effects that would be considered slight and local.	Changes in the local area flooding would be measurable, although the changes would be small and the effects would be localized.	Changes in local area flooding would be measurable and the changes would be substantial.	Changes in local area flooding would be readily measurable and would have substantial consequences on a local and regional level.

Definition of Duration:

Short-term: Effects lasting less than 2 years
Long-term: Effects lasting longer than 2 years

Cumulative Impacts

The spatial boundary for the cumulative impacts assessment has been defined as the area surrounding the intersection of East State Park Road and Beverly Drive, approximately 300 feet on East State Park Road north of Beverly Drive, approximately 150 feet south of Beverly Drive, and approximately 200 feet of Beverly Drive east of East State Park Road. This area routinely floods throughout the year. The temporal boundary for the cumulative impacts assessment has been defined as from the construction of roads through 10 years in the future.

Past actions that would have contributed to cumulative impacts include:
Construction of roadways through this area,
Construction of ditches to drain the Great Marsh, and the
Construction of the Town of Beverly Shores (including housing and businesses).

Present and future actions that would contribute to cumulative impacts include:
Plugging of the ditches to restore wetland habitat (also a past action).

These actions combined would have a moderate adverse impact to local area flooding because drainage patterns have been changed in the area, causing the accumulation of more water in the intersection.

Environmental Effects

3.4.1 East State Park Road

No Action Alternative

The No Action Alternative would have long-term moderate adverse impacts to the local area flooding. The water would continue to overtop the roadway from the east side of East State Park Road to the west side of East State Park Road.

Conclusions. The No Action Alternative would have a long-term moderate adverse impact to local area flooding. The No Action Alternative combined with the cumulative actions would have a long-term moderate adverse impact to local area flooding.

Multiple-Culvert Alternative

This alternative would have a long-term moderate beneficial impact to local area flooding. Culverts would be placed in an overflow capacity situated at the current road level of the road, so water would flow through as if it were overtopping the roadway. The new roadway surface constructed on top of the culverts would allow flood water to flow through the culverts instead of on the roadway, alleviating the issue of standing water on the roadway. Construction activities would be timed to limit work during the high water periods of the year.

Conclusions. The Multiple-Culvert Alternative would have a long-term moderate beneficial impact to local area flooding. The Multiple-Culvert Alternative combined with the cumulative actions would have a negligible beneficial impact to local area flooding.

Multiple-Trench Drain Alternative

The placement of trench drains on top of the existing roadway would allow the flow over water similar to the current flooding patterns. This would keep the water levels on the sides of the roadways the same, while elevating the roadway so that there is no standing water to impede vehicles. The Multiple-Trench Drain Alternative would have a long-term moderate beneficial impact to local area flooding.

Conclusions. The Multiple-Trench Drain Alternative would have a long-term moderate beneficial impact to local area flooding. The Multiple-Trench Drain Alternative combined with the cumulative actions would have a negligible beneficial impact to local area flooding.

Obliteration Alternative

The Obliteration Alternative would have a long-term negligible beneficial impact to local area flooding because it would likely lower water levels in the previous northeast corner of the intersection and increase water levels on what was the south side of Beverly Drive because there would no longer be an impediment to the surface flow. This would likely lessen the volume of water flowing from east to west across East State Park Road, and lower the water level in the northeast corner of the intersection. However, it is unlikely that this alternative would completely keep water from flooding the intersection.

Conclusions. The Obliteration Alternative would have a long-term negligible beneficial impact to local area flooding. The Obliteration Alternative combined with the cumulative actions would have a negligible adverse impact to wetlands.

Flow-Control Berm Alternative

This alternative would have a long-term negligible beneficial impact to local area flooding because the placement of fill to construct the berm would decrease the water retention capacity of the wetland. The higher elevation of berm area may raise the water level of the wetland behind it. There may also not be adequate area to discharge the water in the ditch to after it overflows the berm, which may lead to flooding. The soils and elevation of the area may cause water to seep into the ditch underneath or through the berm, which also may lead to flooding.

Conclusions. The Flow-Control Berm Alternative would have a long-term negligible beneficial impact to local area flooding. The Flow-Control Berm combined with the cumulative actions would have a negligible adverse impact.

3.5 VISITOR USE AND EXPERIENCE

Affected Environment

Part of the purpose of the National Lakeshore is to offer opportunities for recreation, education, inspiration, and enjoyment. Consequently, one of the Park's management goals is to ensure that visitors safely enjoy and are satisfied with the availability, accessibility, diversity, and quality of Park facilities, services, and appropriate recreational opportunities.

In September of 2005, traffic counts were taken in the intersection of East State Park Road and Beverly Drive in three locations; East State Park Road north of Beverly Drive, East State Park Road south of Beverly Drive, and Beverly Drive. Traffic counts were taken for approximately one week and the average daily traffic (ADT) was 527, 430, and 133 respectively. The traffic count varied greatly between weekday and weekend. The highest number of vehicles was recorded on Sunday, with a count of 1040 on East State Park Road north of the intersection with Beverly Drive.

Regulations and Policies

Enjoyment of park resources and values is part of the fundamental purpose of all parks. The NPS Management Policies (NPS 2001a) provides the basic service-wide policies on visitor use and recreation activities (Section 8.2.2).

Methodology

Available information regarding traffic counts was compiled by talking to park staff. Predictions about short-term and long-term impacts to visitor use and experience were based on previous experience of projects of similar scope and characteristics. Analyses of the potential intensity of impacts to visitor use and experience were derived from the available information on the Park and best professional judgment. The construction of a build alternative would most likely be two years or less, therefore the short-term duration is two years.

Definition of Intensity Levels:

Negligible	Minor	Moderate	Major
Changes in visitor use and/or experience would be below or at the level of detection. The visitor would not likely be aware of the effects associated with the alternative.	Changes in visitor use and/or experience would be detectable, although the changes would be slight. The visitor would be aware of the effects associated with the alternative, but the effects would be slight.	Changes in visitor use and/or experience would be readily apparent. The visitor would be aware of the effects associated with the alternative and would likely be able to express an opinion about the changes.	Changes in visitor use and/or experience would be readily apparent and severely adverse or exceptionally beneficial. The visitor would be aware of the effects associated with the alternative and would likely express a strong opinion about the changes.

Definition of Duration:

Short-term: Effects lasting less than 2 years
Long-term: Effects lasting longer than 2 years

Cumulative Impacts

The spatial boundary for the cumulative impacts assessment has been defined as the area encompassing the National Lakeshore. The temporal boundary for the cumulative impacts assessment has been defined as from the construction of roads through 10 years in the future.

Past actions that would have contributed to cumulative impacts include:
The establishment of the Indiana Dunes National Lakeshore,
Construction of trails,
Construction of roadways and parking lots, and the
Construction of the Town of Beverly Shores (including housing and businesses).

Present and future actions that would contribute to cumulative impacts include:
Prescribed burns (also a past action), and the
Repair of Beverly Drive.

These actions combined would have a minor beneficial impact to the visitor use and experience because the construction of trails, roadways, parking lots and facilities enhance the visitor's ability to access Kemil Beach and enjoy the National Lakeshore. The repair of Beverly Drive would provide for smoother pavement and therefore a more enjoyable driving experience. The prescribed burns would have short-term minor adverse impacts due to increased smoke, but the burns reduce the built-up flammable material and maintain the grasses.

3.5.1 East State Park Road

No Action Alternative

The No Action Alternative would have long-term minor adverse impacts. The continued standing water on the roadway and degradation of the road structure would impact visitors driving on East State Park Road and Beverly Drive to access Kemil Beach and the trails in the area.

Conclusions. Visitor use and experience would have long-term minor adverse impacts as a result of the No Action Alternative because the standing water on the roadway and poor pavement would not be resolved. The No Action Alternative combined with the cumulative actions would have a negligible adverse impact to visitor use and experience.

Multiple-Culvert Alternative

This alternative would have a long-term minor beneficial impact to visitor use and experience. The safety concern regarding standing water and ice on the roadway would be alleviated. The roadway condition would be smoother, adding to an improved visitor experience. There would be a short-term adverse impact to visitor use during construction.

Conclusions. A long-term minor beneficial impact to visitor use and experience would be expected as a result of the Multiple-Culvert Alternative. The Multiple-Culvert Alternative combined with the cumulative actions would have moderate beneficial impacts.

Multiple-Trench Drain Alternative

Visitors would experience an inconvenience during construction due to detours and road closures, however, visitor access to Kemil Beach would be maintained at all times. There would no longer be standing water on the roadway, and therefore the Multiple-Trench Drain Alternative would have a long-term minor beneficial impact to visitor use and experience.

Conclusions. The Multiple-Trench Drain Alternative would have a long-term minor beneficial impact to visitor use and experience. The Multiple-Trench Drain Alternative combined with the cumulative action would have a minor beneficial impact to visitor use and experience.

Obliteration Alternative

The Obliteration Alternative would have long-term minor adverse impact on visitor use and experience. The proposed obliteration of 200 feet of Beverly Road would disconnect the connection between Broadway Road from East State Park Road, which would impact travel routes for residents of Beverly Shores and Park visitors accessing Kemil Beach. Water may still appear on the roadway, but in lesser volumes.

Conclusions. The Obliteration Alternative would have a long-term minor adverse impact on visitor use and experience. The Obliteration Alternative combined with the cumulative actions would have a negligible beneficial impact to visitor use and experience.

Flow-Control Berm Alternative

There would be a short-term minor adverse impact to visitor use during construction. Visitor access to Kemil Beach would be maintained at all times. The extent and volume of flood waters would decrease as a result of this alternative, therefore the Flow-Control Berm Alternative would have long-term negligible beneficial impacts to visitor use and experience.

Conclusions. A long-term negligible beneficial impact to visitor use and experience and visitor use and experience would be expected from implementation of the Flow-Control Berm Alternative. The Flow-Control Berm Alternative combined with the cumulative actions would have a negligible beneficial impact to visitor use and experience.

3.5.2 Mt. Baldy Entrance Road

No Action Alternative

There would be long-term negligible adverse impacts to visitor use and experience. The difficult turn movements would continue for Park visitors.

Conclusions. The No Action Alternative would have long-term negligible adverse impacts to visitor use and experience. The No Action Alternative combined with the cumulative actions would have a negligible beneficial impact to visitor use and experience.

Build Alternative

The Build Alternative would have long-term minor beneficial impacts to visitor use and experience because the difficult turn movements would be resolved, improving the visitor's driving experience in the National Lakeshore. There would be a short-term negligible adverse impact to visitor use during construction, however visitors access to Mt. Baldy would remain available throughout construction.

Conclusions. The Build Alternative would have long-term minor beneficial impacts to visitor use and experience. The Build Alternative combined with the cumulative actions would have a minor beneficial impact to visitor use and experience.

3.6 VISITOR CONFLICTS AND SAFETY

Affected Environment

There have been no reported accidents at the intersection of East State Park Road and Beverly Drive. At the intersection of U.S. 12 and the Mt. Baldy entrance road there has been 3-two car

collisions between 2000 and 2003. There have been 7 deer-vehicle collisions during the same time frame.

Regulations

In addition to the guiding regulations and policies discussed in the "Visitor Experience" section, the *NPS Management Policies 2001* state that the National Park Service is committed to providing appropriate high-quality opportunities for visitors to enjoy the Parks. The policies also state, "While recognizing that there are limitations on its capability to totally eliminate all hazards, the Service and its concessioners, contractors, and cooperators will seek to provide a safe and healthful environment for visitors and employees." Further, the National Park Service will strive to protect human life and provide for injury-free visits.

Director's Order #9: Law Enforcement Program (NPS 2000a), in conjunction with *Reference Manual 9: Law Enforcement*, establishes and defines standards and procedures for NPS law enforcement. Along with education and resource management, law enforcement is an important tool in achieving this mission. Commissioned rangers perform resource stewardship, education, and visitor use management activities, including law enforcement. They provide tranquil, sustainable use and enjoyment of Park resources while simultaneously protecting these resources from all forms of degradation. The objectives of the law enforcement program are to (1) prevent criminal activities through resource education, public safety efforts and deterrence, (2) detect and investigate criminal activity, and (3) apprehend and successfully prosecute criminal violators.

Methodology

Available information regarding accidents was compiled by talking to park staff. Predictions about short-term and long-term impacts to visitor use and experience were based on previous experience of projects of similar scope and characteristics. Analyses of the potential intensity of impacts to visitor conflicts and safety were derived from the available information on the Park and best professional judgment. The construction of a build alternative would most likely be two years or less, therefore the short-term duration is two years.

Definitions of Intensity:

Negligible	Minor	Moderate	Major
The impact to visitor safety would not be measurable or perceptible.	The impact would be measurable or perceptible, and it would be limited to a relatively small number of visitors at localized areas. Impacts to visitor safety could be realized through a minor increase or decrease in the potential for visitor conflicts in current accident areas.	The impact to visitor safety would be sufficient to cause a permanent change in accident rates at existing low accident locations or to create the potential for additional visitor conflicts in areas that currently do not exhibit noticeable visitor conflict trends.	The impact to visitor safety would be substantial either through the elimination of potential hazards or the creation of new areas with a high potential for serious accidents or hazards.

Definition of Duration:

Short-term: Effects lasting less than 2 years
Long-term: Effects lasting longer than 2 years

Cumulative Impacts

The spatial boundary for the cumulative impacts assessment has been defined as the 100 feet surrounding the two intersections. The temporal boundary for the cumulative impacts assessment has been defined as from the construction of roads through 10 years in the future.

Past actions that would have contributed to cumulative impacts include:
The establishment of the Indiana Dunes National Lakeshore,
Construction of roadways and parking lots, and the
Construction of the Town of Beverly Shores (including housing and businesses).

Present and future actions that would contribute to cumulative impacts include:
Prescribed burns (also a past action), and the
Repair of Beverly Drive.

These actions combined would have a minor adverse impact to the visitor conflicts and safety because although the construction of roadways, trails and parking lots provide areas for the visitors to enjoy the National Lakeshore, they also increase the possibility of visitor conflicts. East State Park Road, Beverly Drive, and the Mt. Baldy Entrance Road were all constructed 50 or more years ago. Design standards and construction methods have evolved and these roads are no longer up to current safety standards.

Environmental Effects

3.6.1 East State Park Road

No Action Alternative

The No Action Alternative would have a long-term minor adverse impact on visitor conflicts and safety. The intersection of East State Park Road and Beverly Drive would continue to flood and freeze over, creating hazardous driving conditions for visitors.

Conclusions. The No Action Alternative would have a long-term minor adverse impact on visitor conflicts and safety. The No Action Alternative combined with the cumulative actions would have a minor adverse impact to visitor conflicts and safety.

Multiple-Culvert Alternative

East State Park Drive and Beverly Drive at their intersection will most likely be closed off for construction. Road closures and detours would be necessary to route people around this intersection to Kemil Beach or the town of Beverly Shores, causing a short-term minor adverse

impact. Heavy equipment would travel through the park during construction, which may cause conflicts with visitors in the Park. After this alternative is implemented, there would no longer be flooding on the roadway, which would alleviate the safety concerns regarding driving through standing water and icing of the roadway. Therefore, this alternative would have a long-term minor beneficial impact to visitor conflicts and safety.

Conclusions. The Multiple-Culvert Alternative would have a long-term minor beneficial impact to visitor conflicts and safety. The Multiple-Culvert Alternative combined with the cumulative actions would have a negligible adverse impact to visitor conflicts and safety.

Multiple-Trench Drain Alternative

East State Park Drive and Beverly Drive at their intersection will most likely be closed off for construction. Road closures and detours would be necessary to route people around this intersection to Kemil Beach or the town of Beverly Shores, causing a short-term minor adverse impact. Heavy equipment would travel through the park during construction, which may cause conflicts with visitors in the Park. After this alternative is implemented, there would no longer be flooding on the roadway, which would alleviate the safety concerns regarding driving through standing water and icing of the roadway. Therefore, this alternative would have a long-term minor beneficial impact to visitor conflicts and safety.

Conclusions. The Multiple-Trench Drain Alternative would have a long-term minor beneficial impact to visitor conflicts and safety. The Multiple-Trench Drain Alternative combined with the cumulative actions would have a negligible adverse impact to visitor conflicts and safety.

Obliteration Alternative

The Obliteration Alternative would have a long-term negligible adverse impact on visitor conflicts and safety. The proposed obliteration of 200 feet of Beverly Road would no longer allow access between Broadway Road and East State Park Road, but alternate routes exist to access the area. Water may continue to appear on the roadway, though in lesser volumes.

Conclusions. The Obliteration Alternative would have a long-term negligible adverse impact to visitor conflicts and safety. The Obliteration Alternative combined with the cumulative actions would have a minor adverse impact to visitor conflicts and safety.

Flow-Control Berm Alternative

Heavy equipment would travel through the park during construction, which may cause conflicts with visitors in the Park. After this alternative is implemented, there would be less flooding incidents on the roadway, which would decrease the safety concerns regarding driving through standing water and icing of the roadway. Therefore, this alternative would have a long-term negligible beneficial impact to visitor conflicts and safety.

Conclusions. The Flow-Control Berm Alternative would have a long-term negligible beneficial impact. The Flow-Control Berm Alternative combined with the cumulative actions would have a minor adverse impact to visitor conflicts and safety.

3.6.2 Mt. Baldy Entrance Road

No Action Alternative
Visitor conflicts and safety would remain essentially the same. Current safety issues at the intersection would remain unresolved. This site would continue to experience an elevated number of vehicle collisions, therefore the No Action Alternative would have a long-term minor adverse impact on visitor conflicts and safety.

Conclusions
The No Action Alternative would have a long-term minor adverse impact on visitor conflicts and safety. The No Action Alternative combined with the cumulative actions would have a minor adverse impact on visitor conflicts and safety.

Build Alternative
The Build Alternative would have a long-term minor beneficial impact to visitor conflicts and safety. The angle of the intersection would be improved to allow for more sight distance to drivers, making turn movements easier. There would be a short-term minor adverse impact to visitor conflicts and safety during construction due to construction equipment accessing the area. Visitor access to Mt. Baldy would remain throughout construction.

Conclusions
The Build Alternative would have a long-term beneficial impact to visitor conflicts and safety. The Build Alternative combined with the cumulative actions would have a minor beneficial impact to visitor conflicts and safety.

4.0 PUBLIC INVOLVEMENT AND COORDINATION

As required by NPS policies and planning documents, it is the Park's objective to work with State, Federal, and local governmental and private organizations to ensure that the Park and its programs are coordinated with theirs, and are supportive of their objectives, as far as proper management of the Park permits, and that their programs are similarly supportive of Park programs.

4.1 Public Notice / Public Comment Period

In accordance with Section 5.5 of the *Director Order 12*, coordination and public involvement in the planning and preliminary design of the proposed action was initiated early in the process.

A Public Notice was placed in two of the Park's surrounding newspapers. In addition to the Public Notice, a Public Scoping document was mailed out in the beginning of December 2004 to the town of Beverly Shores and was presented at a meeting of the Association of Beverly Shores Residents on February 5th by the Park Superintendent to gather their input on various aspects of the project. The public was asked to send their comments to the Superintendent by February 15th 2005

In order to give the public and all interested parties a chance to review the EA, it will be noticed for public comment for a minimum of 30 days through local newspapers and on the world-wide-web. During this 30-day period, hardcopies of the EA will be available for review at the Headquarters of the Indiana Dunes National Lakeshore located at 1100 N. Mineral Springs Road, Porter, Indiana 46304; the Park's Visitor Center located at U.S. Highway 12 and Kemil Road in Beverly Shores; the Beverly Shores Town Hall; the Michigan City Public Library; and on the world wide web as indicated below. Copies of the EA will also be sent to applicable Federal, State, and local agencies for their review and comment.

An electronic version of this document can be found on the National Park Services Planning Environment and Public Comment (PEPC) website at http://parkplanning.nps.gov. This site provides access to current plans, environmental impact analyses, and related documents on public review. Users of the site are encouraged to submit comments on this document while it is available for public review. This document is located under the Midwest Region, Indiana Dunes NL. An electronic version may also be found at the Federal Highway Administration, Eastern Federal Lands Highway Division's website at http://efl.fhwa.dot.gov/planning/nepa.htm.

4.2 Permits and Agency Coordination

The Clean Water Act (CWA) of 1972 was created to restore and maintain waters of the United States. Several sections of the CWA are applicable to activities in or near waters of the United States, including both navigable waters and adjacent wetlands. Section 404 of the CWA, which is administered by the U.S. Army Corps of Engineers, regulates the discharge of dredged or fill material. The actions proposed are anticipated to impact waters of the United States, and therefore anticipated to be subject to U.S. Army Corps of Engineers review under the 404 regulatory program. Section 401 of the CWA, administered by the Indiana Department of

Environmental Management must certify that proposed activities that would result in discharges to surface water are consistent with the CWA. The Indiana Department of Environmental Management, as authorized by the Environmental Protection Agency, administers section 402 National Pollutant Discharge Elimination System (NPDES). Stormwater discharges from construction activities that disturb a total of 1 or more acres of land require a NPDES permit.

Coastal Zone Management Act

Congress enacted the Coastal Zone Management Act to "preserve, protect, develop and, where possible, to restore and enhance the resources of the nation's coastal zone for this and succeeding generations."

The Coastal Zone Management Act (CZMA) of 1972 gives states with federally approved coastal programs the lead in coordinating and strengthening coastal zone management activities of all levels of government. Specifically, the CZMA gives state coastal programs the ability to require federal agencies to carry out their activities within the coastal zone in ways that are consistent with the state costal program's policies. Federal consistency is the review of federal projects for consistency with state coastal policies.

An important element of the Coastal Zone Management program is "Federal Consistency". Stated in overly simplified terms, Federal Consistency conforms direct and indirect federal activities with state law to the extent practicable. Federal Consistency is a legal acknowledgement under federal law of the importance of respect for state law.

The Federal Consistency aspect of CZM will be administered in Indiana as a networked program. The state agency responsible for the management of a particular regulatory program will evaluate whether a federal activity is consistent with the laws administered by that agency. Upon the advice of the appropriate sister agency, the DNR (and NRC) will make Indiana's formal determination of Federal Consistency, subject to review by the U.S. Department of Commerce.

A federal consistency application is initiated when the LMCP receives this information for one of the following:

A consistency determination from a federal agency conducting an activity.

- Indicate location of project (provide map), project start date and duration, and extent of work to be conducted onsite.
- Provide information for contact person including: name, title, mailing address, email address, phone and fax number.
- Letter would either state: "The proposed activity complies with Indiana's approved coastal management program and will be conducted in a manner consistent with such program" or "The proposed activity does not comply with Indiana's approved coastal management program"

The letter would be sent to:
Federal Consistency Coordinator
Indiana Department of Natural Resources
402 W. Washington St., Room W267
Indianapolis, IN 46229

4.3 List of Preparers and Reviewers

Federal Highway Administration
Brigitte A. Mandel, Project Manager
Kevin Rose, Environmental Protection Specialist
Lisa Thaxton, Environmental Protection Specialist
David Dajc, Hydraulics Engineer
Corey Bobba, Geotechnical Engineer

Indiana Dunes National Lakeshore
Susan Lehmann, Park Engineer

5.0 REFERENCES

J.F. New & Associates, Inc. October 2005. *Wetland Delineation Report, Indiana Dunes National Lakeshore, Porter and La Porte Counties, Indiana.*

National Park Service. January 1997. *East Unit Indiana Dunes National Lakeshore Draft General Management Plan Amendment Environmental Assessment.*

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Federal Highway Administration, Eastern Federal Lands Highway Division. 2000 *Engineering Study of Roads and Bridges, Indiana Dunes National Lakeshore.*

Indiana Department of Environmental Management. 2006. http://www.in.gov/idem/

Natural Resources Conservation Service. 2006. http://websoilsurvey.nrcs.usda.gov/app/National Park Service, U.S. Department of the Interior

APPENDIX A: PUBLIC INVOLVEMENT

National Park Service
U.S. Department of the Interior

Indiana Dunes National Lakeshore
1100 North Mineral Springs Road
Porter, IN 46304-1299

EXPERIENCE YOUR AMERICA™

National Park Service
U.S. Department of Interior

Comments about the study can be directed to:

Superintendent
Indiana Dunes National Lakeshore
1100 North Mineral Springs Road
Porter, IN 46304-1299

Email: INDU_Forum@nps.gov

Website: www.nps.gov/indu

The National Park Service cares for the special places saved by the American people so that all may experience our heritage.

Project Location Map

ENVIRONMENTAL ASSESSMENT
for the
REHABILITATION OF THE EAST STATE PARK ROAD, BEVERLY DRIVE INTERSECTION AND THE RECONFIGURATION OF THE HAMILTON AVENUE, U.S. ROUTE 12 INTERSECTION

Project Numbers: INDU 10(1), 209(1), 211(1)

Introduction
The National Park Service (NPS), in partnership with the Federal Highway Administration, Eastern Federal Lands Highway Division (EFLHD), is beginning the environmental assessment process for rehabilitation of the intersection of East State Park Road and Beverly Drive, and the reconfiguration of the intersection between Hamilton Avenue and U.S. Route 12. The analysis will examine methods for addressing flooding and the hydrology of the adjacent wetlands, providing adequate pavement structure, improving safety, and improving accessibility. The discussion will include the proposed project's potential for social, economic and/or environmental impacts.

Public input is an important part of the assessment process. You are invited to comment by sending issues that you feel should be considered during project analysis. Comments should be sent to the address below by Feb 15, 2005.

Superintendent
Indiana Dunes National Lakeshore
1100 North Mineral Springs Road
Porter, IN 46304-1299
or e-mail at: INDU_Forum@nps.gov

Federal Lands Highway

Location

The intersections of East State Park Road and Beverly Drive, and Hamilton Avenue and U.S. Route 12 are located in the Indiana Dunes National Lakeshore, which is approximately 50 miles southeast of Chicago, Illinois in the counties of Lake, Porter, and LaPorte. The national lakeshore runs for nearly 25 miles along southern Lake Michigan, bordered by Michigan City, Indiana on the east and Gary on the west. The Park contains beaches, sand dunes, bogs, wetlands, woodland forests, an 1830's French Canadian homestead, and a working 1900's era farm.

The East State Park Road is a two lane, 1.2 mile asphalt paved roadway, which provides access to the beach. Hamilton Avenue is a two lane, 0.1 mile asphalt paved roadway, which provides access to the Mount Baldy site, one of the Lakeshore's recreational sites. Beverly Drive is a 4.9 mile east-west road running between East State Park Road and Hamilton Avenue. (See map at bottom of back page for detailed site locations.)

Purpose and Need

The asphalt pavement along the entire length of East State Park Road is in poor condition. A portion of the roadway length, in the vicinity of the intersection with Beverly Drive, frequently becomes flooded. The immediate effects during high water are poor driving conditions, reduced traffic capacity, loss of steering and braking control, and an increased potential for vehicles to stray from the roadway. During the winter the frozen floodwaters create very unsafe conditions. In the longer term, pavements deteriorate more rapidly when the base and shoulders are saturated with water. The flooding also allows vehicle contaminants, such as oil and antifreeze, to be more effectively washed into the wetlands on both sides of the road.

The existing intersection of Hamilton Avenue and U.S. Route 12 is aligned at a very sharp angle. It creates poor sight conditions and difficult turn movements. Road safety and the accessibility at this intersection need to be improved.

The Alternatives

East State Park Road

There are four alternatives in addition to the No Action Alternative. (These are listed in no particular order.)

1. ***Multiple-Culvert Alternative***
   This includes raising East State Park Road surface by placing a soil embankment (with riprap slope protection), or by placing embankment behind new retaining walls.
2. ***Viaduct Alternative***
   This includes raising the elevation of East State Park Road by constructing elevated roadway on pilings through the flood area, which eliminates the use of culverts.
3. ***Obliteration Alternative***
   This would obliterate approximately 200 feet of Beverly Drive from the East State Park Road intersection, eastward. Beverly Drive would become a dead end at the existing parking area that serves the paved bird-watching trail. Visiting traffic could access the bird-watching trail from Broadway on the east. Additional 18-inch (or larger) culverts would be placed under East State Park Road to alleviate the flow of water from east to west.
4. ***Flow-Control Berm Alternative***
   The elevation of the East State Park Road would be raised according to the "Multiple Culvert Alternative". An earth berm would be constructed parallel to East State Park Road, and a second berm parallel to Beverly Drive. A natural ditch would exist between the berm and the road shoulder. The berms would retain surface water in the wetland up to the maximum level, then allow overflow to enter the ditch. The ditch would convey excess flow to the culverts under East State Park Road and Beverly Drive. The entire ditch and berm would be restored to wetland conditions.

Hamilton Avenue (Mount Baldy Access)

There is one alternative in addition to the No Action Alternative.

1. ***Intersection Reconfiguration***
   The intersection of Hamilton Avenue and U.S. Route 12 would be relocated 100 feet east of the existing location. Hamilton Avenue would intersect at an approximate right-angle. The pavement between the existing intersection and the proposed intersection would be obliterated. This obliterated section would be re-graded to natural contours and re-vegetated. Turning blisters would be added to U.S. Route 12 for additional safety.

The Next Step

You are invited to send us your issues and concerns regarding the proposed road improvement projects by writing to the address or e-mail at the bottom of the first page. Public issues will be studied as part of the environmental assessment process. The comment period will end February 15, 2005. Thank you for your interest in this Indiana Dunes National Lakeshore project.

APPENDIX B: AGENCY CORESPONDENCE

DNR Indiana Department of Natural Resources

Joseph E. Kernan, Governor
John R. Goss, Director

Division of Nature Preserves
402 W. Washington St., Rm W267
Indianapolis IN 46204

December 01, 2004

Brigitte Azran
Environmental Compliance Specialist
Federal Highway Administration
21400 Ridgetop Circle
Sterling, VA 20166-6511

Subject: Project INDU 10 (1), 209(1), 211(1), Indiana Dunes National Lakeshore
Request for Comments on Listed Endangered or Threatened Species

Dear Ms. Azran:

This is in response to your letter of November 4th requesting comments regarding the proposed rehabilitation of East State Park Road within the Indiana Dunes National Lakeshore. Upon review of the information you provided our staff submits the following comments and recommendations.

The reconstruction and realignment of the Rice Street intersection does not appear to pose any particular environmental problems that we are aware of.

The location of the proposed rehabilitation of East State Park Road should be considered environmentally sensitive and of particular ecological significance. State Park property on the west side of East State Park Road is dedicated as a State Nature Preserve, and state statute prohibits the disturbance or any taking of this property. Likewise altering the natural hydrology of a state dedicated nature preserve is also prohibited. Additionally this property is registered as a National Natural Landmark with the National Park Service.

The portions of the Lake Michigan shoreline region remaining in a natural state, particularly those protected by the Indiana Dunes National Lakeshore and the Indiana Dunes State Park have perhaps the highest density of endangered, threatened, and rare plant and animal species of any comparable area in the state of Indiana.

I have enclosed a print out listing those plant and animal species of concern known to occur in the vicinity of East State Park Road, as well as a map indicating their mapped locations.

Our preference of the four alternates to alleviate flooding in the vicinity of Beverly Drive is the ***obliteration alternative***. This alternative appears to have the least potential for negative effects upon the area's sensitive natural resources. We are concerned that any raising of the existing roadway or the construction of earthen berms, as proposed in the *multiple culvert alternative* and the *flow-control berm alternative* would substantially alter the flow of surface water and result in negative hydrological effects. We are also quite concerned that both of these alternatives as well as the *viaduct alternative* will result in excessive construction activity; because of the area's ecological sensitivity it seems prudent to select the alternative requiring the least construction activity.

Disturbances should be kept to an absolute minimum.

Disturbed areas should be revegetated only with species of native plants that are known to occur in the area. Under no circumstances should non-native plant species be utilized for revegetating disturbed areas.

Limestone riprap should not be utilized for erosion control in any portion of these projects. Limestone riprap is unsightly and has the ability to alter the pH of the adjacent soils, thus affecting native vegetation.

If you have any questions or require any additional information please do not hesitate to contact our office.

Sincerely,

John A Bacone

John Bacone
Director, Division of Nature Preserves

Enclosures

cc:
Christie Kiefer, Environmental Coordinator, Division of Fish and Wildlife, IDNR
Tom Post, Regional Ecologist, Division of Nature Preserves, IDNR
Jerry Pagac, Director, Division of State Parks, IDNR
Dale Engquist, Superintendent, Indiana Dunes National Lakeshore, NPS
Elizabeth McCloskey, U.S. Fish and Wildlife Service

050103-Pr-4

United States Department of the Interior
Fish and Wildlife Service

Bloomington Field Office (ES)
620 South Walker Street
Bloomington, IN 47403-2121
Phone: (812) 334-4261 Fax: (812) 334-4273

December 27, 2004

Ms. Brigitte Azran
Environmental Compliance Specialist
Federal Highway Administration
Eastern Federal Lands Highway Division
21400 Ridgetop Circle
Sterling, Virginia 20166-6511

Project Nos.: INDU 10(1), 209(1), 211(1)
Road(s): Beverly Drive at East State Park Road; Hamilton Avenue/Rice Street at US 12
Waterway: Great Marsh
Work Type: Intersection improvements
County(ies): Porter and LaPorte

Dear Ms. Azran:

This responds to your letter dated November 4, 2004, requesting our comments on the aforementioned project.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et. seq.) and are consistent with the intent of the National Environmental Policy Act of 1969, the Endangered Species Act of 1973, and the U. S. Fish and Wildlife Service's Mitigation Policy.

Two intersection improvement projects are being evaluated. The East State Park Road/Beverly Drive project is located along the eastern boundary of Indiana Dunes State Park about 0.6 miles north of US 12. This intersection, which is within the Great Marsh, frequently becomes flooded, with the inundation continuing eastward along Beverly Drive. It is proposed to rehabilitate the deteriorated pavement along 1.2 miles of East State Park Road northward from US 12. Four alternatives for addressing the flooding of the Beverly Drive intersection are being considered: *Multiple culvert alternative*, involving raising the roadway and placing culverts underneath the embankment; *viaduct alternative*, involving raising the roadway on pilings; *obliteration alternative*, involving removing 200 feet of Beverly Drive east from the intersection and making it a dead end roadway; and *flow-control berm alternative*, involving berms and ditches along both roadways to redirect the water to new culverts under the roadways.

The U.S. Fish and Wildlife Service supports the *obliteration alternative* because the other 3 would adversely affect the Great Marsh. This large wetland lies between US 12 on the south and dune ridges to the north and extends almost all the way across Porter County, although there are interruptions due to industrial developments and Burns Waterway. East State Park Road crosses this wetland from south to north and the Beverly Drive intersection is approximately at the center of this crossing. Therefore, both roadways affect the natural hydrology of the wetland. West of East

State Park Road the Great Marsh is within the Indiana Dunes State Park and the Dunes Nature Preserve, which comprises 1,530 acres of the 2,182 acre park. This Nature Preserve is also a National Natural Landmark registered with the National Park Service. Therefore, the alternative chosen must not further adversely affect the hydrology and the botanical and faunal resources of this significant wetland.

Closing Beverly Drive 200 feet or more east of East State Park Road, with access remaining from Broadway to the east, appears to be the most environmentally acceptable alternative, especially since the area now occupied by the roadway would be restored to wetland. However, the placement of additional 12- or 18-inch culverts under East State Park Road to increase water movements under the roadway would likely have short-term adverse impacts on water quality and vegetation during construction. Therefore, disturbances must be kept to the absolute minimum. Disturbed areas must be revegetated only with species native to the area.

Hamilton Avenue/Rice Street connects the Mount Baldy recreation area with US 12 immediately east of the Porter-LaPorte County Line. Curves in US 12, and the east end of Beverly Drive immediately to the west, cause sight distance problems for vehicles entering and exiting Mount Baldy. Your letter indicates that the intersection would be moved about 100 feet to the east so that Hamilton Avenue/Rice Street meets US 12 at a right angle. However, it is not indicated what length of Hamilton Avenue/Rice Street would be relocated. This roadway is a narrow drive curving through a wooded sand dune for about 300 to 400 feet from the Mount Baldy parking lot. If this entire length is reconstructed to the east, a cut through the wooded dune would be required. However, if only the southernmost 100 feet is curved to the east, this can be done through a sparse dune area that has been partly cleared for the recreation area signs and to improve sight distance at US 12.

The U.S. Fish and Wildlife Service supports whatever roadway construction will have the least possible disturbance to the wooded dune crossed by Hamilton Avenue/Rice Street. A naturally contoured dune should be recreated where the existing pavement is removed and revegetated with native species, including black oak.

ENDANGERED SPECIES

The proposed project is within the range of the Federally endangered Indiana bat (Myotis sodalis), Karner blue butterfly (Lycaeides melissa samuelis), and piping plover (Charadrius melodus), and the threatened bald eagle (Haliaeetus leucocephalus) and Pitcher's (Dune) thistle (Cirsium pitcheri). The Indiana bat has been found in the Heron Rookery Unit of INDU but is not known to be present either along East State Park Road or at Mount Baldy. Karner blue butterflies are found within the West Unit of the INDU in eastern Lake and western Porter Counties but this species is not present at either of the proposed project areas. Critical habitat for the piping plover has been designated along 7.9 km of Lake Michigan shoreline from the western edge of the Dunes Acres/Cowles Bog Unit of INDU through the Indiana Dunes State Park to East State Park Road (also known as Kemil Road). This designation extends 500 meters (1640 feet) inland from the normal high water mark. This critical habitat is not within either of the proposed project areas, although it is adjacent to the portion of East State Park Road that will be repaved. Bald eagles are occasional winter visitors to the southern end of Lake Michigan and have been observed within the 2 general project areas, but there is no specific habitat available at INDU for this species. Pitcher's thistle is found along shoreline dunes in several areas of INDU; however, there is no habitat for this species at either of the proposed project sites. Therefore, the proposed projects are not likely to adversely affect these endangered and threatened species or critical habitat.

There is a 1934 report of the Federally endangered American burying beetle (Nicrophorus americanus) within the Tamarack Unit of INDU, which is the unit including Mount Baldy. However, this species is no longer extant within INDU.

The projects are also within the range of the eastern massasauga rattlesnake (Sistrurus catenatus catenatus), which has been listed as a Candidate for possible future listing as either threatened or endangered. Candidate species are those for which sufficient information on their biological status exists to warrant listing, but for which listing has not yet occurred. This species is considered endangered by the State of Indiana. Massasaugas have been reported within the Beverly Shores area of INDU and the Indiana Dunes State Park, with the most recent sightings of both dead and living individuals being in the vicinity of Broadway and US 12. However, we note that the Indiana Division of Nature Preserves lists this species very near the East State Park Road/Beverly Drive intersection, so it is possible that this species may be found in this project area. Removal of the western portion of Beverly Drive and restoration of wetlands in that area is likely to benefit the eastern massasauga if it is present in the general area. There is no suitable habitat for the eastern massasauga at the Hamilton Avenue/Rice Street/US 12 project area.

This precludes the need for further consultation on these projects as required under Section 7 of the Endangered Species Act of 1973, as amended. If, however, new information on endangered species at the sites becomes available or if project plans are changed significantly, please contact our office for further consultation.

We appreciate the opportunity to comment at this early stage of project planning. Please keep us informed of actions taken on these proposed projects. If you have any questions, please contact Elizabeth McCloskey at (219) 983-9753 or elizabeth_mccloskey@fws.gov.

Sincerely yours,

Elizabeth S. McCloskey Acting

for Scott E. Pruitt
Supervisor

cc: Superintendent, Indiana Dunes National Lakeshore, Porter, IN
Director, Indiana Division of Nature Preserves, Indianapolis, IN
Director, Indiana Division of State Parks and Reservoirs, Indianapolis, IN
Regional Ecologist, Indiana Division of Nature Preserves, Medaryville, IN
Property Manager, Indiana Dunes State Park, Chesterton, IN
Christie Kiefer, Environmental Coordinator, Division of Water, Indianapolis, IN

Mitchell E. Daniels, Jr., Governor

DNR Indiana Department of Natural Resources

Division of Historic Preservation & Archaeology·402 W. Washington Street, W274·Indianapolis, IN 46204-2739
Phone 317-232-1646·Fax 317-232-0693·dhpa@dnr.IN.gov

March 21, 2005

Dale B. Engquist
Indiana Dunes National Lakeshore
National Park Service
U.S. Department of the Interior
1100 North Mineral Springs Road
Porter, Indiana 46304-1299

Federal Agencies: Federal Highway Administration *and* National Park Service

Re: Additional information regarding the rehabilitation of East State Park Road (INDU 10[1], 209[1], 211[1]; HFPP-15, DNR #11223)

Dear Mr. Engquist:

Pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f) and 36 C.F.R. Part 800, the staff of the Indiana State Historic Preservation Officer ("Indiana SHPO") has conducted an analysis of the materials dated February 4, 2005, and received on February 9, 2005, for the above indicated project in Indiana Dunes National Lakeshore, Pine Township, Porter County, Indiana.

Based upon the documentation available to the staff of the Indiana SHPO, we have not identified any historic buildings, structures, districts, or objects listed in or eligible for inclusion in the National Register of Historic Places within the probable area of potential effects.

In terms of potential impact on archaeological resources, a review of our records indicates that the proposed project area is in an environmental setting that is suitable to contain archaeological resources, but has never been evaluated by a qualified archaeologist. Moreover, twenty archaeological sites have already been recorded within one mile of the proposed project location. Given the aforementioned factors, a reconnaissance level archaeological survey will be required to determine the presence or absence of archaeological resources. The survey must be done in accordance with the Secretary of the Interior's "Standards and Guidelines for Archaeology and Historic Preservation" (48 F.R. 44716). A description of the survey methods and results must be submitted to the Division of Historic Preservation and Archaeology for review before we can comment further.

Once the indicated information is received, the Indiana SHPO will resume identification and evaluation procedures for this project. Please keep in mind that additional information may be requested in the future.

A copy of the revised 36 C.F.R. Part 800 that went into effect on August 5, 2004, may be found on the Internet at www.achp.gov for your reference. If you have questions about our comments, please call our office at (317) 232-1646. Questions about archaeological issues should be directed to Christopher Koeppel. Questions about historic buildings or structures pertaining to this project should be directed to Shana Kelso.

Be advised that John R. Goss no longer holds the title of Indiana SHPO. As of February 21, 2005, Kyle J. Hupfer, who was appointed by the Governor Daniels, became the new Indiana SHPO.

Very truly yours,

for Jon C. Smith
Deputy State Historic Preservation Officer

JCS:CDK:SNK:snk

cc: Robert F. Tally, Division Administrator, Federal Highway Administration
Brigitte Azran, Federal Highway Administration
emc: Erica Taylor, Calumet Regional Office, Historic Landmarks Foundation of Indiana

United States Department of the Interior

NATIONAL PARK SERVICE
Midwest Archeological Center
Federal Building, Room 474
100 Centennial Mall North
Lincoln, Nebraska 68508-3873

IN REPLY REFER TO:

October 25, 2005

Memorandum

To: Superintendent, Indiana Dunes National Lakeshore

From: Archeologist, Midwest Archeological Center

Subject: Sec. 106 compliance for East State Park Road/Beverly Drive intersection removal, Indiana Dunes National Lakeshore.

This memorandum is in response to a request for additional documentation for the East State Park Road/Beverly Drive intersection removal project planned by Indiana Dunes National Lakeshore (INDU) (NPS 2004). On March 21, 2005 the Indiana Department of Natural Resources, Division of Historic Preservation & Archeology (INDHPA) requested additional archeological inventory at the location of the proposed undertaking (Smith 2005). However, this road intersection has been determined to have minimal archeological potential because of its location in a wetland and the lack of previously recorded sites in the immediate vicinity (Figure 1). Archeological sites previously recorded in the area of the East State Park road are all located on dune and beach landforms to the south, not in wetlands (Figure 1).

On May 23, 2005, Midwest Archeological Center (MWAC) Archeologist Jay Sturdevant and INDU Historical Architect Judith Collins participated in a consultation meeting with Jon Smith and Rick Jones of the INDHPA. At this meeting, the representatives of the INDHPA concurred with our assessment that the East State Park Road/Beverly Drive intersection has a low probability of containing archeological materials because of its location in a wetland ecozone. It was agreed at this meeting that additional archeological inventory was unnecessary (Collins 2005; Sturdevant 2005).

Based on previous cultural resource assessments (Engquist 2005), archeological reconnaissance of the East State Park Road/Beverly Drive intersection, and discussions with the INDHPA staff, the Midwest Archeological Center recommends no additional archeological investigations in advance of this road intersection removal. Not only is archeological inventory of a wetland virtually impossible, but the probability of encountering archeological materials in a wetland ecozone is minimal. Please contact me if any additional information is required to fulfill the park's obligations for this project.

Thanks for your cooperation,

Archeologist
Jay T. Sturdevant

cc
Landscape Architect, Indiana Dunes National Lakeshore
Historian, Indiana Dunes National Lakeshore
Historic Architect, Indiana Dunes National Lakeshore
Mark Lynott, Midwest Archeological Center
Tom Thiessen, Midwest Archeological Center
Jeffrey Richner, Midwest Archeological Center
Library, Midwest Archeological Center

Enclosures (1)

References Cited

Collins, Judith
2005 Record of Meeting Between Collins (INDU), Sturdevant (MWAC) and Jon Smith (INDHPA) and Rick Jones (INDHPA) on May 23, 2005. Record on file, National Park Service, Indiana Dunes National Lakeshore.

Engquist, Dale B.
2005 Letter to Ken Kaczmarek, Acting State Historic Preservation Officer, Indiana Department of Natural Resources, Division of Historic Preservation & Archaeology, dated February 4, 2005. Letter on file, Indiana Dunes National Lakeshore.

Meyer, Alfred H.
1954 Circulation and Settlement Patterns of the Calumet Region of Northwest Indiana and Northeast Illinois (The First Stage of Occupance – the Pottawatomie and the Fur Trader, -1830). *Annals of the Association of American Geographers* XLIV:245-274.
1956 Circulation and Settlement Patterns of the Calumet Region of Northwest Indiana and Northeast Illinois: The Second Stage of Occupance – Pioneer Settler and Subsistence Economy, 1830-1850. *Annals of the Association of American Geographers* XLVI:312-356.

National Park Service (NPS)
2004 *Environmental Assessment for the Rehabilitation of the East State Park Road, Beverly Drive Intersection and the Reconfiguration of the Hamilton Avenue, U.S. Route 12 Intersection.* On file, National Park Service, Indiana Dunes National Lakeshore.

Smith, Jon
2005 Letter to Indiana Dunes Superintendent Dale B. Engquist dated March 21, 2005 requesting additional information regarding the rehabilitation of East State Park Road (INDU 10[1], 209[1], 211[1]; HFPP-15, DNR # 11223). Letter on file, National Park Service, Indiana Dunes National Lakeshore and National Park Service, Midwest Archeological Center, Lincoln, Nebraska.

Sturdevant, Jay T.
2005 *Trip report for inventory and testing of ROU properties and road removals at Indiana Dunes National Lakeshore, May 9 – June 10, 2005.* Trip report on file, National Park Service, Midwest Archeological Center, Lincoln, Nebraska.

APPENDIX C: LAWS (STATUTES), EXECUTIVE ORDERS, REGULATIONS, POLICIES, AND GUIDELINES

Following are descriptions for some of the laws, executive orders, regulations, and policies that are referenced in the Environmental Assessment.

Archaeological and Historic Preservation Act of 1974 (P.L. 93-291; 88 Stat. 174) amended the 1960 Reservoir Salvage Act; provided for the preservation of significant scientific, prehistoric, historic and archaeological materials and data that might be lost or destroyed as a result of federally sponsored projects; provided that up to one percent of project costs could be applied to survey, data recovery, analysis, and publication.

Archaeological Resources Protection Act (ARPA) of 1979 (P.L. 96-95; 93 Stat. 712) defined archaeological resources as any material remains of past human life or activities that are of archaeological interest and at least 100 years old; required federal permits for their excavation or removal and set penalties for violators; provided for preservation and custody of excavated materials, records, and data; provided for confidentiality of archaeological site locations; encouraged cooperation with other parties to improve protection of archaeological resources. Amended in 1988 to require development of plans for surveying public lands for archaeological resources and systems for reporting incidents of suspected violations.

The Clean Air Act of 1963 requires federal land managers to have an affirmative responsibility to protect a park's air quality from adverse air pollution impacts.

The Endangered Species Act of 1973, as amended, prohibits federal actions from jeopardizing the existence of federally-listed threatened or endangered species or adversely affecting designated critical habitat. Federal agencies must consult with the U.S. Fish and Wildlife Service to determine the potential for adverse effects. Federal agencies are also responsible for improving the status of listed species.

Federal Farmland Protection Policy Act (FPPA) of 1987, requires federal agencies to consider the adverse effects their programs may have on the preservation of farmland, review alternatives that could lessen adverse effects, and ensure that their programs are compatible with private, local and state programs and policies to protect farmland. The purpose of the FPPA is to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses.

Historic Sites Act of 1935, declared it a national policy to preserve historic sites, buildings, and objects for public use and authorized the NPS to "restore, reconstruct, rehabilitate, preserve, and maintain historic and prehistoric sites, buildings, objects, and properties of national historical or archaeological significance."

The National Environmental Policy Act of 1969 (NEPA), as amended, requires detailed and documented environmental analysis of proposed federal actions that may affect the quality of the human environment.

The National Historic Preservation Act (NHPA) of 1966, as amended, declared historic preservation as a national policy and authorized the Secretary of the Interior to expand and

maintain a National Register of Historic Places that would include properties of national, state, and local historic significance. The Act recommends that federal agencies proposing action consult with the State Historic Preservation Officer regarding the existence and significance of cultural and historical resource sites.

National Park Service Organic Act of 1916

National Park System General Authorities Act

The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990. These regulations address the rights of lineal descendants, Indian tribes, and native Hawaiian organizations to Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony. They require federal agencies and institutions that receive federal funds to provide information about Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony to lineal descendants, Indian tribes, and native Hawaiian organizations and, upon presentation of a valid request, dispose of or repatriate these objects to them.

Executive Order (EO) 11593 (Protection and Enhancement of the Cultural Environment) instructs all federal agencies to support the preservation of cultural properties and directs them to identify and nominate to the National Register cultural properties under their jurisdiction and to "exercise caution…to assure that any federally-owned property that might qualify for nomination is not inadvertently transferred, sold, demolished, or substantially altered."

EO 11988 directs federal agencies to protect, preserve, and restore the natural resources and functions of floodplains; avoid the long- and short-term environmental effects associated with the occupancy and modification of floodplains; and avoid direct and indirect support of floodplain development and actions that could adversely affect the natural resources and functions of floodplains or increase flood risks.

EO 11990 (Protection of Wetlands) directs federal agencies to minimize impacts and mitigate the destruction, loss, or degradation of wetlands; preserve, enhance and restore the natural and beneficial values of wetlands; and avoid direct and indirect support of new construction in wetlands unless there are no practicable alternatives and the proposed action includes all practicable measures to minimize harm to wetlands. NPS policies for implementing EO 11990 are found in Director's Order 77-1 "Wetland Protection" and the associated Procedural Manual. This order requires that parks assess all direct or indirect impacts, including whether each alternative "supports, encourages, or otherwise facilitates additional wetland development."

EO 12898 (Environmental Justice in Minority and Low-Income Populations) directs federal agencies to assess whether their actions have disproportionately high and adverse human health or environmental effects on minority and low-income populations

EO 13112 requires that federal agencies act to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.

EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) directs Federal agencies to avoid taking actions that have a measurable negative effect on migratory bird populations. If such actions are taken, the EO directs agencies "to develop and implement within two years a Memorandum of Understanding with the U.S. Fish and Wildlife Service that shall promote the conservation of migratory bird populations." This EO also defines migratory bird "species of concern" as "those species listed in the periodic report Migratory Nongame Birds of Management Concern in the United States, priority migratory bird species as documented by established plans [such as Bird Conservation Regions in the North American Bird Conservation Initiative or Partners in Flight physiographic areas], and those species listed in 50 CFR 17.11 [Endangered Species Act]".

Part 36 of the Code of Federal Regulations (CFR) provides for the proper use, management, government, and protection of persons, property, and natural and cultural resources within areas under the jurisdiction of the NPS.

- 36 CFR 18 (NHPA of 1966), "Leases and Exchanges of Historic Property," govern the historic property leasing and exchange provisions of this law.

- 36 CFR 60 (NHPA and EO 11593), "National Register of Historic Places," addresses concurrent state and federal nominations, nominations by federal agencies, and removal of properties from the National Register.

- 36 CFR 63 (NHPA and EO 11593), "Determinations of Eligibility for inclusion in the National Register of Historic Places," establishes process for federal agencies to obtain determinations of eligibility on properties.

- 36 CFR 65 (Historic Sites Act of 1935), "National Historic Landmarks Program," establishes criteria and procedures for identifying properties of national significance, designating them as national historic landmarks, revising landmark boundaries, and removing landmark designations.

- 36 CFR 67 (Historic Preservation Certification Pursuant to the Tax Reform Act of 1976, the Revenue Act of 1978, the Tax Treatment Extension Act of 1980, and the Economic Recovery Tax Act of 1981), establishes procedures whereby owners or holders of long-term leases for old and/or historic buildings may obtain certification to gain federal tax credits for rehabilitation.

- 36 CFR 68 (NHPA) contains the Secretary of the Interior's standards for historic preservation projects, including acquisition, protection, stabilization, restoration, and reconstruction.

- 36 CFR 79 (NHPA and ARPA), "Curation of Federally-owned and Administered Archeological Collections," provides standards, procedures and guidelines to be followed by federal agencies in preserving and providing adequate long-term curatorial services for archeological collections of prehistoric and historic artifacts and associated records that are

recovered under Section 110 of the NHPA, the Reservoir Salvage Act, ARPA and the Antiquities Act.

- 36 CFR 800 (NHPA and EO 11593), “Protection of Historic and Cultural Properties,” includes regulations of the Advisory Council on Historic Preservation to implement Section 106 of the NHPA as amended, and presidential directives issued pursuant thereto.

40 CFR 1500-1508 (Council on Environmental Quality NEPA regulations of 1978) - provides Regulations for Implementing the Procedural Provisions of NEPA.

43 CFR 3 (Antiquities Act) establishes procedures to be followed for permitting the excavation or collection of prehistoric and historic objects on federal lands.

43 CFR 7, Subparts A and B (ARPA, as amended), "Protection of Archaeological Resources, Uniform Regulations" and "Department of the Interior Supplemental Regulations," provides definitions, standards, and procedures for federal land managers to protect archaeological resources and provides further guidance for Interior bureaus on definitions, permitting procedures, and civil penalty hearings.

The NPS Management Policies (NPS 2001a) provide general guidance for managing natural resources.